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PROMOTE PROTECT PROSPER

South Carolina

Emergency Medical Services

State – Approved

# PROTOCOLS

## Adult and Pediatric

Revised January 2007 Edition

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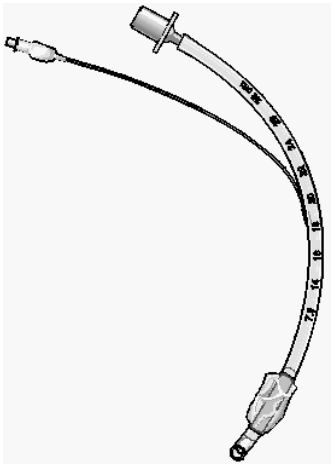
# General Protocols





# Universal Patient Care Protocol

1. Assure scene safety. Assure appropriate personal protective equipment (gloves, safety glasses, gown, etc.).
2. Assess ABC's.
3. Apply oxygen, as needed, using device appropriate for patient condition.
4. Apply pulse oximetry. If indicated, apply cardiac monitor and record rhythm strip.
5. Perform initial assessment following appropriate assessment procedure.
6. Assess vital signs.
7. Obtain SAMPLE history.
8. Consider obtaining BGL level.
9. Consider an IV or INT.
10. Go to protocol appropriate for patient chief complaint and assessment findings.
11. **Contact medical control as soon as feasible.**

**Pearls:**

- Exam: Minimal exam, if not noted on specific protocol, is vital signs, mental status, and location of injury or complaint.
- Required vital signs on EVERY patient include blood pressure, pulse, respirations, pain/severity
- A pediatric patient is defined by the Broselow tape. If the patient does not fit on the tape, they are considered adult.
- Timing of transport should be based on patient's clinical condition and the transport policy.

# Adult Airway

1. Assess ABC's, respiratory rate, effort, and adequacy.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Consider CPAP if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Basic airway maneuvers first – open airway; nasal, oral airway; bag valve mask.
4. If obstructed – Utilize Obstructed airway procedure to clear airway. Utilize direct laryngoscopy, if needed, to attempt visualization of obstruction.
5. Place ET tube; or LMA OR OTHER APPROVED ALTERNATE AIRWAY DEVICE if unsuccessful with ET tube.
6. Verify tube placement. Re-verify every few minutes and after every patient move.
7. If three failed intubation attempts by most proficient technician on scene, go to LMA OR OTHER APPROVED ALTERNATE AIRWAY DEVICE.
8. **Contact Medical Control as soon as feasible.**

**Pearls:**

- For this protocol, adult is defined as 12 years old or greater.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic – use oxygen, not a paper bag.
- Sellick's maneuver should be used to assist with difficult intubations.
- Paramedics should consider a LMA OR OTHER APPROVED ALTERNATE AIRWAY DEVICE when they are unable to intubate a patient.
- Hyperventilation in head trauma should only be used to maintain a $pCO_2$ of 30-35. Therefore after 1-2 minutes of hyperventilation, ventilate the patient at 15- 18 breaths per minute.
- Consider C-collar to maintain ET/LMA OR OTHER APPROVED ALTERNATE AIRWAY DEVICE placement for all intubated patients. (Remove collar upon transfer of patient).
- If first intubation attempt fails, make an adjustment and try again:
- Try a different laryngoscope blade
- Try a smaller ET tube size
- Apply **BURP** maneuver (Push trachea back [posterior], Up, and to patient's right)
- Change head positioning
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- **Notify medical control AS EARLY AS POSSIBLE about the patient's difficult/failed airway.**

# Rapid Sequence Induction Intubation

1. Preoxygenate for 4 minutes with 100% oxygen by non-rebreather mask or with 3 full deep breaths on 100% oxygen in an emergent situation
2. Prepare for suctioning.
3. Administer Versed 2.0 mg IVP (give 1 mg if SBP <100mm/Hg) or Etomidate 0.3 mg/kg IVP.
4. Administer Lidocaine 1.5 mg/kg IVP to closed head trauma patients only.
5. Administer Atropine 0.5 mg IVP (minimum dose of 0.15mg) given only in cases of bradycardia. (Not required in all patients)
6. Administer Succinylcholine 1.5 mg/kg IVP.
    a) Apply cricoid pressure upon administration of Succinylcholine and maintain until patient is intubated, proper placement is confirmed and then secured.
    b) Wait 60 seconds prior to intubation attempt.
    c) Avoid PPV unless SpO2 falls <91%.
7. Intubate.
    a) Discontinue laryngoscopy and begin PPV with 100% O2 if intubation not accomplished within 30 seconds or SpO2 falls <91% and/or heart rate falls <60.
8. Once in place, with cuff 1 inch beyond vocal cords, confirm placement by:
    a) Bilateral breath sounds,
    b) Chest wall rise,
    c) Absence of gastric sounds,
    d) Positive indications of ETCO2 detector and
    e) Continued SpO2 readings in high 90's.

- **Pearls:**
- **Indications for RSI:**
  - *Trauma patient with significant facial trauma and poor airway control.*
  - *Closed head injury or signs of major CVA, i.e. posturing, unconsciousness, etc.*
  - *Burn patient with airway involvement and inevitable airway loss.*
  - *Respiratory Exhaustion in severe asthma or COPD with hypoxia.*
  - *Overdoses unresponsive to Naloxone, i.e. Tricyclics, etc., with altered mental status where loss of airway is inevitable.*
  - *Trauma patients with a GCS of 9 or less with an intact gag reflex.*
- **RSI is contraindicated for patients less than 18 years old.**
- If the patient becomes combative prior to arriving at destination (hospital or landing zone), repeat Versed and administer Norcuron.
- If intubation is unsuccessful, maintain cricoid pressure and provide BVM ventilation until paralytic wears off (approximately 3 – 12 minutes).
- Common tricyclics = Elavil, Triavil, Etrafon, Amitriptyline

# Pediatric Airway

1. Assess ABC's, respiratory rate, effort, and adequacy.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. If inadequate – Basic maneuvers first – open airway; nasal, oral airway; bag valve mask.
4. If obstruction, clear airway utilizing Obstructed airway procedure. May utilize direct laryngoscopy to attempt visualization of obstruction.
5. If apneic, place ET tube and confirm tube placement.
6. Continue bag valve mask ventilations, position patient and reassess.
7. Immediate transport is indicated.
8. **Contact medical control as soon as feasible.**

**Pearls:**

- For this protocol, pediatric is defined as less than 12 years.
- If unable to intubate, continue bag valve mask ventilation, transport rapidly, and notify receiving hospital as early as possible.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Sellick's maneuver should be used to assist with difficult intubations.
- Do not assume hyperventilation is psychogenic – use oxygen, not a paper bag.
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Consider C-collar to maintain ET tube placement for all intubated patients.

# Back Pain

| History: | Signs and Symptoms: | Differential: |
|---|---|---|
| Age | Pain (paraspinous, spinous process) | Muscle spasm/strain |
| Past medical history | Swelling | Herniated disc with nerve compression |
| Past surgical history | Pain with range of motion | Sciatica |
| Medications | Extremity weakness | Spine fracture |
| Onset of pain/injury | Extremity numbness | Pyelonephritis |
| Previous back injury | Shooting pain into an extremity | Kidney stone |
| Traumatic mechanism | Bowel/bladder dysfunction | Aneurysm |
| Location of pain | | Pneumonia |
| Fever | | |
| Improvement or worsening | | |
| With activity | | |

1. Assess ABC's.
2. Consider causes.
3. If injury present or significant mechanism for injury, apply spinal immobilization
4. Administer oxygen. Apply pulse oximetry. Assist ventilation via BVM, if indicated.
5. Establish IV Normal Saline or INT adapter.
6. Systolic BP < 90 mmHg with clear lung sounds, administer 20 ml/kg bolus of normal saline. May repeat to maintain systolic BP > 90.
7. Monitor lung sounds closely during bolus infusion.
8. Consider cardiac monitor and record rhythm strip.
9. Monitor vital signs every 5 minutes; maintain body temperature.
10. **Contact medical control as soon as feasible.**
11. Consider pain control per protocol.
12. Consider other treatment protocols as necessary.

**Pearls:**

- Abdominal aneurysms are a concern in patients over 50.
- Kidney stones typically present with an acute onset of flank pain which radiates around to the groin area.
- Patients with midline pain over the spinous processes should be spinally immobilized.
- Any bowel or bladder incontinence is a significant finding which requires immediate medical evaluation.

# Behavioral Emergency

| History: | Signs & Symptoms | Differential: |
|---|---|---|
| Situational crisis<br>Psychiatric illness/medications<br>Injury to self or threats to others<br>Medic alert tag<br>Substance abuse/ overdose<br>Diabetes | Anxiety, agitation, confusion<br>Affect change, hallucinations<br>Delusional thoughts, bizarre behavior<br>Combative, violent<br>Expression of suicidal/ homicidal thoughts | See Altered Mental Status<br>Alcohol intoxication<br>Toxin/ substance abuse<br>Medication effect/ overdose<br>Withdrawal syndromes<br>Depression<br>Bipolar (manic-depressive)<br>Schizophrenia<br>Anxiety disorders |

1. Assure scene safety:
    a. DO NOT APPROACH until scene is safe
    b. Evaluate for evidence of violence, substance abuse, suicide attempt
2. Assess ABC's.
3. Apply Oxygen, if indicated. Apply pulse oximetry
4. Remove patient from stressful environment.
5. Utilize verbal techniques (reassure, calm, establish rapport).
6. Treat suspected medical or trauma problems per appropriate protocol.
7. **Contact medical control as soon as feasible.**

    **Consider restraint procedure if necessary to prevent patient from harming you or self.**

    **a. Explain the options to physical restraint.**
    **b. Use only humane, reasonable force.**
    **c. Once the patient is restrained, do not release the patient until you deliver him/her to the receiving hospital.**

**Pearls:**
- YOUR SAFETY FIRST!!!!
- Be sure to consider all possible medical/trauma causes for behavior (hypoglycemia, overdose, substance abuse, hypoxia, head injury, etc.).
- Do not irritate the patient with a prolonged exam.
- Do not overlook the possibility of associated domestic violence or child abuse.

# Fever

| History: | Signs & Symptoms | Differential: |
|---|---|---|
| Age | Warm | Infections/ Sepsis |
| Duration of fever | Flushed | Cancer/Tumors/Lymphomas |
| Severity of fever | Sweaty | Medication or drug reaction |
| Past medical history | Chills/Rigors | Connective tissue disease |
| Medications | **Associated symptoms:** | Arthritis |
| Immunocompromised | **(helpful to localize source)** | Vasculitis |
| (transplant, HIV, Diabetes, Cancer) | Myalgias, cough, chest pain, | Hyperthyroid |
| Environmental exposure | headache, dysuria, abdominal | Heat stroke |
| Last acetaminophen | pain, mental status changes, | |
| | rash | |

1. Assure ABC's.
2. Apply oxygen at appropriate rate, Pulse oximetry
3. Apply cardiac monitor and record rhythm strip
4. Establish IV normal Saline. May consider PRN adapter
5. Consider 200 cc bolus of normal saline
6. Encourage fluid intake and begin cooling measures if temperature is felt to be in excess of 100° F.
7. **Contact medical control as soon as feasible.**
8. Consider other treatment protocols as necessary.

**Pearls:**

- Febrile seizures are more likely in children with a history of febrile seizures and with rapid elevation in temperature.
- Temperature may be decreased by a combination of 4 methods:
- Radiation – Unwrap or remove clothing
- Evaporation – Tepid water bath to skin
- Convection – Increase air movement to skin
- Conduction – Use cool packs to back of neck, armpits, groin cautiously
- Rehydration with fluids increases the patient's ability to sweat and improves heat loss

# IV/IO

1. Assess ABC's.
2. Assess need for IV (emergent or potentially emergent medical or trauma condition).
3. Utilize aseptic technique when performing IV access.
4. Establish IV Normal Saline
    A. Peripheral sites should be utilized whenever possible
    B. External jugular IV (≥ 12 y.o.) for life threatening event
    C. Intraosseous line for life threatening event
5. Limit IV attempts to three (3) for hemodynamically stable patient**. Attempts are per patient, not per technician.**
6. Unless the patient requires a fluid bolus/boluses, the paramedic may use an INT rather than hanging a bag of IV fluid.
7. Monitor infusion at appropriate rate.
8. IO lines should be established with IO needles for children under 6 years old. The paramedic should use another IO device (Bone Injection Gun, EZ IO, P.I.N.G. or other FDA approved IO device) for all patients over 6 years old.
9. **Contact medical control as soon as feasible.**
10. Continue IV attempts per physician order for hemodynamically unstable patients.
    A. Consider External jugular access (≥ 12 y.o.) for life-threatening event.
    B. Intraosseous line for life threatening event in any patient.

**Pearls:**
- Any prehospital fluids or medications approved for IV use may be given through an intraosseous line.
- All IV rates should be at KVO unless administering fluid bolus
- Use micro-drip sets for all patients ≤ 6 y.o.
- External jugular lines can be attempted initially in life-threatening events where no obvious peripheral site is noted. EJ sticks should be limited to one per patient.
- Any venous catheter which has already been accessed prior to EMS arrival may be used
- Upper extremity sites are preferable to lower extremity sites
- Lower extremity sites are contraindicated in patients with vascular disease or diabetes
- In post-mastectomy patients, **avoid** IV, blood draw, injection, or blood pressure in arm on affected side.

# Pain Control

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Age | Severity (Pain Scale) | Per the specific protocol: |
| Location | Quality (sharp, dull, etc.) | Musculoskeletal |
| Duration | Radiation | Visceral (abdominal) |
| Severity (1-10) | Relation to movement, respiration | Cardiac |
| Past medical history | Increased with palpation of area | Pleural/ respiratory |
| Medications | | Neurogenic |
| Drug allergies | | Renal (colic) |

1. Assess ABC's.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Apply Pulse oximetry.
3. Place patient in position of comfort.
4. Apply cardiac monitor and record rhythm strip.
5. Establish IV normal saline or INT adapter.
6. Consider other treatment protocols based on patient's specific complaint.
7. If pain is mild to moderate and patient is stable give comfort and support. Administer N2O2 unless contraindicated.
8. If pain is severe **contact Medical Control** for the use of Morphine 2-4 mg IV slow.
9. **Contact medical control as soon as feasible.**
10. Consider Morphine or other pain management medications with physician authorization

**Pearls:**

- Pain severity (0-10) is a vital sign to be recorded pre, post IV or IM medication administration and at disposition.
- Vital signs should be obtained pre, 15 minutes post, and at disposition with all pain medications.
- Contraindications to Morphine use include hypotension, head injury, respiratory distress or severe COPD.
- Contraindications to N2O2 include head injury, chest injury, ETOH or other drug intoxication, abdominal pain or COPD.
- All patients should have drug allergies documented prior to administering pain medication.
- All patients who receive medications must be observed for 15 minutes for drug reactions.

# Spinal Immobilization

1. Perform neuro exam; Any focal deficit?
2. Assess for the following:
   a) Is there significant mechanism of injury present?
   b) Does the patient have an altered level of consciousness?
   c) Is there any evidence of intoxication?
   d) Does the patient have a distracting injury? (Any painful injury that might distract the patient from the pain of a C-spine injury)
   e) Is there point tenderness or any pain upon incidental movement by the patient?

**If you answered "*No*" to ALL of the above questions, the patient does not require spinal immobilization in the field.**

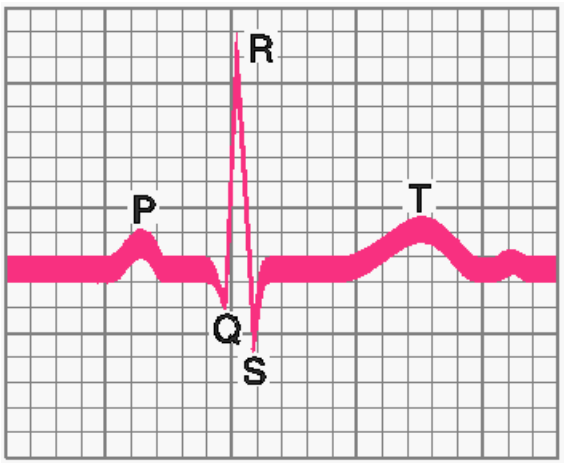
**If you answered "*Yes*" to any of the above questions, the patient MUST be immobilized. You should also immobilize any other time you feel the patient requires this procedure.**

**Pearls:**

- Significant mechanisms include high-energy events such as ejection, high falls, and abrupt deceleration crashes and may indicate the need for spinal immobilization in the absence of signs or symptoms.
- **The decision NOT to implement spinal immobilization is the responsibility of the SENIOR CREW MEMBER.**
- In very old and very young patients, a normal exam may not be sufficient to rule out spinal injury.

# Medical Protocols



# Abdominal Pain

| History: | Signs & Symptoms | Differential: |
|---|---|---|
| Age | Pain (location/migration) | Pneumonia or Pulmonary Embolus |
| Past medical/surgical history | Tenderness | Liver (hepatitis, CHF) |
| Medications | Nausea | Peptic Ulcer disease/Gastritis |
| Onset | Vomiting | Gallbladder |
| Palliation/Provocation | Diarrhea | Myocardial infarction |
| Quality (crampy, constant, sharp, dull, etc.) | Dysuria | Pancreatitis |
| | Constipation | Kidney stone |
| Region/Radiation/Referred | Vaginal bleeding/discharge | Abdominal aneurysm |
| Severity (1-10) | Pregnancy | Appendicitis |
| Time (duration/repetition) | **Associated symptoms:** | Bladder/Prostate disorder |
| Fever | **(helpful to localize source)** | Pelvic (PID, ectopic pregnancy ovarian cyst) |
| Last meal eaten | Fever, headache, weakness | Spleen enlargement |
| Last bowel movement | malaise, myalgias, cough, | Bowel obstruction |
| Menstrual history (pregnancy) | mental status changes, rash | Gastroenteritis (infectious) |

1. Assess ABC's
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Establish IV normal saline. May consider INT.
4. Consider 20-ml/kg fluid bolus with normal saline if patient has a systolic BP of < 90 mmHg..
5. If the patient is vomiting excessively, administer Phenergan 12.5 -- 25 mg IVP.
6. **Contact medical control as soon as feasible.**
7. Consider other protocols as based on patient complaint

**Pearls:**

- Document the mental status and vital signs prior to administration of Phenergan
- Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over 50
- Appendicitis presents with vague, periumbilical pain which migrates to the RLQ over time.

# Allergic Reaction

| History: | Signs & Symptoms | Differential: |
|---|---|---|
| Onset & location | Itching or hives | Urticaria (rash only) |
| Insect sting or bite | Coughing/wheezing or | Anaphylaxis (systemic effect) |
| Food allergy/exposure | respiratory distress | Shock (vascular effect) |
| Medication allergy/exposure | Chest or throat constriction | Angioedema (drug induced) |
| New clothing, soap, detergent | Difficulty swallowing | Aspiration/airway obstruction |
| Past history of reactions | hypotension or shock | Vasovagal event |
| Medication history | Edema | Asthma or COPD |
| | | CHF |

1. Assess ABC's
2. Apply oxygen Assist ventilation with BVM if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Establish IV normal saline
4. If systolic BP < 90 mmHg and lungs are clear, administer 20ml/kg normal saline bolus.

   Repeat as needed to maintain systolic BP > 90 mm Hg.
5. Patient presents with no respiratory involvement (Hives and rash only);
   Administer 25-50 mg Diphenhydramine IV or IM
6. Respiratory involvement (Evidence of impending respiratory distress or shock);

   Administer 0.3 mg Epinephrine 1:1000 SQ or IM (**If patients > 50 y.o., have a heart rate of > 150 or previous cardiac history, contact medical control prior to administering Epi.**)
   Administer 25-50 mg Diphenhydramine IV or IM
7. **Contact medical control as soon as feasible.**
8. If evidence of anaphylaxis;
   Administer 0.3 mg Epinephrine 1:10,000 IV
9. Follow other treatment protocols as necessary (Hypotension, Dysrhythmias, Respiratory distress)

**Pearls:**

- Contact medical control prior to administering epinephrine in patients who are > 50 y.o., have a history of cardiac disease, or if the patient's heart rate is > 150. Epinephrine may precipitate cardiac ischemia.
- Any patient with respiratory symptoms or extensive reaction should receive IV or IM Diphenhydramine

- The shorter the onset from contact to symptoms present, the more severe the reaction

# Altered Mental Status

| History: | Signs & Symptoms | Differential: |
|---|---|---|
| Known diabetic, medic alert tag | Decreased mental status | Head Trauma |
| Drugs, drug paraphernalia | Change in baseline mental status | CNS (stroke, tumor, seizure, infection) |
| Report of illicit drug use or toxic ingestion | Bizarre behavior | Cardiac (MI, CHF) |
| Past medical history | Hypoglycemia (cool, diaphoretic skin) | Infection |
| Medications | Hyperglycemia (warm, dry skin; fruity breath; Kussmal resp; signs of dehydration) | Thyroid (hyper/hypo) |
| History of trauma | | Shock (septic, metabolic traumatic) |
| | | Diabetes (hyper/hypoglycemia) |
| | | Toxicological |
| | | Acidosis/Alkalosis |
| | | Environmental exposure |
| | | Pulmonary (hypoxia) |
| | | Electrolyte abnormality |
| | | Psychiatric disorder |

1. Assess ABC's
2. Administer oxygen, assist ventilation via BVM. Intubate patient and confirm tube placement if indicated. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Spinal immobilization if known or suspected trauma involvement.
5. If the patient is thought to have abused ETOH, administer Thiamine 100 mg IM or slow IVP
6. Obtain BGL:
   If BGL< 70; administer 25 grams of Dextrose 50% solution IV
   If BGL> 70; continue with protocol
   Consider 1 mg Glucagon SQ or IM, if no IV site can be established quickly.
7. Establish IV normal saline. May consider INT.
8. If systolic BP > 90 mm HG and lungs are clear, administer 20 ml/kg normal saline bolus. May repeat to maintain systolic BP > 90.
9. Consider other causes such as: head injury, CVA, overdose, hypoxia, etc.
10. If unknown or suspected narcotics overdose, administer Narcan 1 - 2 mg slowly titrated to effect.
11. **Contact medical control as soon as feasible.**
12. Consider other protocols as necessary

**Pearls:**

- Be aware of altered mental status as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia.
- Low glucose (< 70), normal glucose (70-120), high glucose (> 250)

- Consider restraints, if necessary, for patient's and/or personnel's protection per the restraint procedure.

# Asystole

| History: | Signs & Symptoms | Differential: |
|---|---|---|
| Past medical history | Pulseless | Medical or Trauma |
| Medications | Apneic | Hypoxia |
| Events leading to arrest | No electrical activity on ECG | Potassium (hypo/hyper) |
| End stage renal disease | | Drug Overdose |
| Estimated downtime | | Acidosis |
| Suspected hypothermia | | Hypothermia |
| Suspected overdose | | Device (lead) error |
| DNR or Living Will | | Death |

1. Assess ABC's
2. Consider withholding resuscitation efforts if patient meets criteria as specified in Withhold Resuscitation procedures.
3. Administer 100% oxygen utilizing BVM.
4. Apply cardiac monitor and record rhythm strip. Always confirm Asystole in two leads.
5. Begin/Continue CPR for five (5) cycles.
6. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
7. Establish IV / IO normal saline.
8. Administer 1.0 mg Epinephrine 1:10,000 IVP with 3-5cc flush. Repeat every 3-5 minutes. May give 1 dose Vasopressin 40 U IV /IO to replace first or second dose of Epinephrine.
9. Administer 1.0 mg Atropine IV. May repeat every 3-5 minutes.
10. Consider Sodium Bicarbonate if > 15 minutes down time or unknown down time.
11. Consider other possible causes
12. Consider criteria for discontinuation
13. **Contact medical control as soon as feasible.**

**Pearls:**

- At any time; if patient has return of spontaneous circulation, go to Post Resuscitation Protocol
- ALWAYS confirm Asystole in two leads
- Avoid hyperventilation
- Rescuers should minimize interruptions in chest compressions while inserting the airway and should not interrupt CPR while establishing IV or IO access

# Atrial Fibrillation/Atrial Flutter

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Medications (Aminophylline, Diet Pills, Thyroid supplements, Decongestants, Digoxin) | HR>150 BPM | Heart Disease (WPW, Valvular) |
| Diet (caffeine, chocolate) | QRS < 0.12 sec | Sick Sinus Syndrome |
| Drugs (nicotine, cocaine) | Dizziness, CP, SOB | Myocardial Infarction |
| Past medical history | Potential presenting rhythm | Electrolyte imbalance |
| History of palpitations/ heart Racing | Sinus tachycardia | Exertion, pain, emotional stress |
| Syncope/ near syncope | Atrial Fibrillation/ Flutter | Fever |
| | Multifocal atrial tachycardia | Hypoxia |
| | | Hypovolemia or anemia |
| | | Drug effect/ Overdose |
| | | Hyperthyroidism |
| | | Pulmonary embolus |

1. Assess ABC's
2. Administer oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip. Obtain 12 –lead ECG if available. Apply pulse oximetry
4. Establish IV Normal Saline at appropriate rate.
5. If patient asymptomatic with vital signs WNL, monitor and transport
6. If patient presenting symptomatic (No palpable BP, altered LOC, CP, SOB, etc.), perform synchronized cardioversion
7. Consider 2 - 4 mg Ativan IV for sedation prior to cardioversion
8. If patient borderline symptomatic, attempt vagal maneuvers.
9. Consider Cardiazem at 20 mg over 2 minutes.
10. **Contact medical control as soon as feasible.**
11. Consider repeat of Cardiazem at 10 mg/hour, titrated to effect, if no response after 15 minutes.

**Pearls:**

- Adenosine may not be effective in identifiable atrial flutter/ fibrillation, yet is not harmful.
- Monitor for hypotension after administration of Cardiazem.
- Monitor for respiratory depression and hypotension associated with Ativan.
- Continuous pulse oximetry is required for all A-Fib/A-Flutter patients.
- Obtain rhythm strips after all rhythm changes and after therapeutic interventions.
- Approved vagal maneuvers include coughing, straining as if attempting a bowel movement, perianal digital massage and attempting to "inflate" a glass bottle. ***Carotid sinus massage is not approved.***
- Cardizem drip = 25 mg / 250 ml @ 100 gtts w/ 60 drop set.
- Avoid Cardiazem if Wolff-Parkinson-White (WPW) Syndrome is present.

# Bradycardia

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Past medical history<br>Medications<br>Beta Blockers<br>Calcium Channel Blockers<br>Clonidine<br>Digitalis<br>Pacemaker | HR < 60/minute<br>Chest Pain<br>Respiratory Distress<br>Hypotension or shock<br>Altered mental status<br>Syncope | Acute myocardial infarction<br>Hypoxia<br>Hypothermia<br>Sinus Bradycardia<br>Athletes<br>Head injury (elevated ICP) or stroke<br>Spinal cord lesion<br>Sick sinus syndrome<br>AV Blocks (1st, 2nd, or 3rd degree) |

1. Assess ABCs
2. Administer oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV normal saline
    a. If patient's systolic BP < 90 mmHg and lungs are clear, administer 20ml/kg normal saline bolus.
5. If patient is symptomatic; administer Atropine 0.5 IV. May repeat every 3-5 minutes to total dose of 3 mg.
6. If ineffective, begin transcutaneous pacing
7. **Contact medical control as soon as feasible.**
8. Consider 2 - 4 mg Ativan IV for sedation for pacing if patient experiences discomfort.
9. If ineffective, administer Dopamine 5-20 mcg/kg/minute.
10. If ineffective, administer Epi infusion at 2-10 mcg/min.

**Pearls:**

- The use of Lidocaine in heart block can worsen bradycardia and lead to Asystole and death.
- Pharmacological treatment of Bradycardia is based upon the presence or absence of significant signs and symptoms (symptomatic vs. asymptomatic)
- If hypotension exists with the bradycardia, treat the bradycardia.
- If blood pressure is adequate, monitor only.
- Mix a Dopamine infusion by adding 400 mg of Dopamine to 250 ml of D5W which results in 1600 mcg/ml. Begin infusing @ 8 gtts for the average sized male (approx. 5 mcg/kg/min).
- Mix an Epi infusion by adding 1 mg of 1:10,000 Epi to 250 ml D5W which results in 4 mcg/ml. Begin infusing @ 30 gtts (2 mcg/min) and titrate to effect.
- Avoid Atropine in second degree type II or third degree AV block.

# Cardiac Arrest

| History: | Signs & Symptoms | Differential: |
|---|---|---|
| Events leading to arrest<br>Estimated downtime<br>Past medical history<br>Medications<br>Existence of terminal illness<br>Signs of lividity, rigor mortis<br>DNR or Living Will | Unresponsive<br>Apneic<br>Pulselessness | Medical vs. Trauma<br>VF vs. Pulseless VT<br>Asystole<br>Pulseless Electrical Activity (PEA) |

1. Assess ABCs
2. Consider withholding resuscitation efforts if patient meets criteria as specified in Withholding Resuscitation Procedures.
3. Begin/continue CPR for five (5) cycles.
4. Administer 100% oxygen via BVM. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
5. Apply cardiac monitor and record rhythm strip.
6. Assess rhythm strip. **Go to appropriate treatment protocol based on rhythm**.
7. **Contact medical control as soon as feasible.**

**Note: The foundation of ACLS care is good BLS care beginning with prompt, high-quality CPR.**

**Pearls:**

- Success is based on proper planning and execution. Procedures require space and patient access. Make room to work.
- Reassess patient airway frequently and with every patient move.
- If patient has return of spontaneous circulation, go to Post Resuscitation Protocol
- Pregnant Maternal Arrest – Treat mother per appropriate protocol with immediate notification to medical control and rapid transport

# Chest Pain
# Suspected Cardiac Event

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Age | CP (pain, pressure, aching, and tightness) | Trauma vs. Medical |
| Medications | Location (substernal, epigastric, arm, jaw, neck, shoulder) | Angina vs. MI |
| Viagra, Levitra, Cialis | Radiation of pain | Pericarditis |
| Past medical history (MI, angina, diabetes) | Pale, diaphoresis | Pulmonary embolism |
| Allergies (Morphine, Lidocaine) | Shortness of breath | Asthma/COPD |
| Recent physical exertion | Nausea/vomiting, dizziness | Pneumothorax |
| Onset | | Aortic dissection or aneurysm |
| Palliation/Provocation | | GE reflux or Hiatal hernia |
| Quality (crampy, constant, sharp, dull, etc.) | | Esophageal spasm |
| Region/ Radiation/Referred | | Chest wall injury or pain |
| Severity (1-10) | | Pleural pain |
| Time (duration/repetition) | | |

1. Assess ABCs.
2. Administer oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip. Perform 12 Lead EKG if available.
4. Establish IV Normal Saline. May consider INT if BP is stable. If BP is <90 mmHg and lungs are clear, administer 200 ml saline bolus.
5. Administer Nitroglycerin
    a. If BP > 100 systolic
    b. If pain is unrelieved; may consider repeat of Nitroglycerin every 5 minutes up to total of 4 doses, if BP remains > 100 systolic
6. Administer (4) baby aspirin (324 mg) to patient.
7. Obtain BGL:
    If BGL< 70; administer 25 grams of Dextrose 50% solution IV. If you suspect the patient has abused ETOH, administer 100 mg Thiamine IVP prior to Dextrose.
    If BGL> 70; continue with protocol
    Consider 1 mg Glucagon IM, if no IV site established.
8. Consider Morphine 2-4 mg IV for pain
9. If patient experiences nausea, administer Phenergan 12.5 – 25 mg IV
10. **Contact medical control as soon as feasible.** Consider other treatment protocols as necessary
11. Complete fibrinolytic checklist.

**Pearls:**

- Avoid Nitroglycerin in any patient who has used **Viagra, Cialis** or **Levitra** in the past **24** hours due to potential severe hypotension.
- If positive EKG changes, establish a second IV while enroute to hospital.
- If patient has taken Nitroglycerin without relief, consider potency of medication.
- Monitor for hypotension after administration of Nitroglycerin and/or morphine.
- Diabetics and geriatric patients often have atypical pain, or only generalized complaints.

# Dental Problems

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Age | Bleeding | Decay |
| Past medical history | Pain | Infection |
| Medications | Fever | Fracture |
| Onset of pain/injury | Swelling | Avulsion |
| Trauma with "knocked out tooth" | Tooth missing or fractured | Abscess |
| Location of tooth | | Facial cellulitis |
| Whole vs. partial tooth injury | | Impacted tooth (wisdom) |
| | | TMJ syndrome |
| | | Myocardial infarction |

1. Assess ABCs. If you suspect the patient has experienced any trauma, immobilize his/her C-Spine.
2. Consider oxygen. Apply pulse oximetry.
3. Consider cardiac monitor and record rhythm strip.
4. Control any hemorrhage with direct pressure
5. If tooth avulsion; place tooth in milk or normal saline for transport
6. Consider pain control protocol
7. **Contact medical control as soon as feasible.**
8. Consider other treatment protocols as necessary

**Pearls:**

- Significant soft tissue swelling to the face or oral cavity can represent a cellulitis or abscess.
- Scene and transport times should be minimized to complete tooth avulsions. Reimplantation is possible within 4 hours if the tooth is properly cared for.
- All tooth disorders typically need antibiotic coverage in addition to pain control.
- Occasionally cardiac chest pain can radiate to the jaw.
- All pain associated with teeth should be associated with a tooth which is tender to tapping or touch (or sensitivity to cold or hot).

# Epistaxis (Nosebleed)

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Age | Bleeding from nasal passages | Trauma |
| Past medical history | Pain | Infection (viral, URI or sinusitis) |
| Medications (HTN, anticoagulants) | Nausea | Allergic rhinitis |
| Previous episodes of epistaxis | Vomiting | Lesions (polyps, ulcers) |
| Trauma | | Hypertension |
| Duration of bleeding | | |
| Quantity of bleeding | | |

1. Assess ABC's. If you suspect the patient has experienced any trauma, immobilize his/her C-Spine.
2. Control hemorrhage; compress nostrils and tilt head forward.
3. Consider Oxygen.
4. Apply cardiac monitor and record rhythm strip. Apply pulse oximetry.
5. Establish IV normal saline if excessive hemorrhage.
6. If evidence of dehydration or patient's systolic BP is < 90 mmHg and lungs are clear, administer 20 ml/kg saline bolus.
7. If patient hypertensive, go to Hypertension protocol.
8. **Contact medical control as soon as feasible.**
9. Consider other protocols as necessary.

**Pearls:**

- It is very difficult to quantify the amount of blood loss with epistaxis.
- Bleeding may also be occurring posteriorly. Evaluate for posterior blood loss by examining the posterior pharynx.
- Anticoagulants include aspirin, Coumadin, non-steroidal anti-inflammatory medications (ibuprofen), and many over-the-counter headache relief powders.

# Hypertension

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Documented hypertension<br>Related diseases: diabetes, CVA, Renal failure, cardiac.<br>Medications (compliance?)<br>Viagra<br>Pregnancy | **One of these:**<br>Systolic BP: 200 or >*<br>Diastolic BP: 120 or >*<br><br>**And at least one of these:**<br>Headache<br>Nosebleed<br>Blurred vision<br>Dizziness | Hypertensive encephalopathy<br>Primary CNS injury<br>(Cushing's response = Bradycardia with hypertension)<br>Myocardial infarction<br>Aortic dissection (aneurysm)<br>Pre-eclampsia/Eclampsia |

1. Assess ABC's.
2. Administer oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Position patient with head elevated.
4. Apply cardiac monitor and record rhythm strip.
5. Establish IV normal saline KVO, or INT.
6. Notify ER ASAP.
7. **Contact medical control as soon as feasible.**
8. Administer Labetolol **with OLMC** @ 10 – 20 mg IV slow (over at least 2 minutes). May administer additional doses at 10 minute intervals to a maximum of 300 mg.
9. Continuously monitor blood pressure

**Pearls:**

- Exam: Mental status, skin, neck, lungs, heart, abdomen, back, extremities, neuro.
- Avoid Nitroglycerin in any patient who has used Viagra in the last 24 hours due to potential severe hypotension.
- Never treat elevated blood pressure based on one set of vital signs.
- Symptomatic hypertension is typically revealed through end organ damage to the cardiac, CNS, or renal systems.
- All symptomatic patients with hypertension should be transported with their head elevated.

# Hypotension

# Shock (non-trauma)

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Blood Loss – vaginal or Gastrointestinal bleeding<br>AAA, ectopic<br>Fluid Loss – vomiting, diarrhea<br>Fever<br>Infection<br>Cardiac Ischemia (MI, CHF)<br>Medications<br>Allergic reaction<br>Pregnancy | Restlessness, confusion<br>Weakness, dizziness<br>Weak, rapid pulse<br>Pale, cool, clammy skin<br>Delayed capillary refill<br>Hypotension<br>Coffee- ground emesis<br>Tarry stools | Shock<br>Hypovolemic<br>Cardiogenic<br>Septic<br>Neurogenic<br>Anaphylactic<br>Ectopic pregnancy<br>Dysrhythmias<br>Pulmonary embolus<br>Tension pneumothorax<br>Medication effect/ Overdose<br>Vasovagal<br>Physiologic (pregnancy) |

1. Assess ABCs
2. Administer Oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV normal saline, large bore catheter. Consider second large bore IV normal saline.
5. If lungs are clear, administer fluid bolus 20 ml/kg
    a. Monitor lungs for fluid overload while administering bolus
6. Repeat fluid bolus, as necessary, to maintain systolic BP of $\geq$ 90 mmHg as long as lungs remain clear.
7. Maintain patient warmth.
8. **Contact medical control as soon as feasible.**
9. Consider Dopamine, 5-20 mcg/kg/min to maintain BP of $\geq$ 90 systolic.
10. Consider other treatment protocols as necessary.

**Pearls:**

- Hypotension can be defined as a systolic blood pressure of < 100.
- Consider performing orthostatic vital signs on patients in non-trauma situations if suspected blood or fluid loss.
- Consider all possible causes of shock and treat per appropriate protocol.

# Overdose/Toxic Ingestion

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Ingestion or suspected ingestion of<br>A potentially toxic substance<br>Substance ingested, route, quantity<br>Time of ingestion<br>Reason (suicidal, accidental, criminal)<br>Available medications in home<br>Past medical history | Mental status changes<br>Hypotension/ hypertension<br>Decreased respiratory rate<br>Tachycardia, other dysrhythmias<br>Seizures | Tricyclic antidepressants<br>Acetaminophen (Tylenol)<br>Depressants<br>Stimulants<br>Anticholinergic<br>Cardiac medications<br>Solvents, alcohols<br>Cleaning agents<br>Insecticides |

1. Assess ABCs
2. Administer oxygen, assist ventilation with BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Obtain history of substance: Name and/or type, amount, time, etc.
4. If external substance (absorbed or inhaled): Remove patient from danger while protecting self from contamination. Irrigate patient as needed; trap run-off irrigant as well as possible.
5. Apply cardiac monitor and record rhythm strip.
6. Establish IV normal saline at appropriate rate, or INT.
7. Obtain BGL reading:
   If BGL< 70; administer 25 grams of Dextrose 50% solution IV.
   If BGL> 70; continue with protocol.
8. Consider 1 mg Glucagon IM, if no IV site established.
9. If unknown substance or known narcotics ingestion, consider 2.0 mg Narcan slow IVP.
10. If organophosphate poisoning, consider Atropine 2 mg IV.
11. Monitor airway and vital signs closely for deterioration.
12. **Contact medical control as soon as feasible.**
13. If known, or highly suspected, Tricyclic overdose, consider Sodium Bicarbonate at 1 mEq/kg.
14. Consider other treatment protocols as necessary.

**Pearls:**

- Do not rely on patient history of ingestion, especially in suicide attempts
- Bring bottles, contents, and emesis to ER with patient.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.
- S&S of Organophosphate Poisoning may include: Excessive sweating and salivation, headache, dizziness, fatigue, chest tightness, numbness, abdominal pain, constricted pupils, pulmonary edema.
- Common tricyclics = Elavil, Triavil, Etrafon, Amitriptyline.

# Post Resuscitation

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Respiratory arrest<br>Cardiac arrest | Return of pulse | Continue to address specific differentials associated with The original dysrhythmia |

1. Reassess ABCs.
2. Assure open airway and continue ventilatory support with 100 % oxygen. Apply Pulse Oximetry.
3. Continue to monitor cardiac rhythm and record a post-arrest strip.
4. Establish IV normal saline at appropriate rate. Obtain BGL.
   a. If hypotensive, consider fluid bolus at 200 cc if lungs are clear.
   b. Repeat to maintain systolic BP $\geq$ 90 mm Hg as long as lungs remain clear.
5. Consider Dopamine at 5-20 mcg/kg/min, Titrated to maintain systolic BP $\geq$ 90 mm Hg.
6. If patient converts from ventricular dysrhythmia, consider Lidocaine at 1-1.5 mg/kg or Amiodarone at 150-300 mg IV/IO.
   a. Follow Lidocaine bolus with maintenance infusion at 2-4 mg/minute.
   b. Follow Amiodarone bolus with maintenance infusion at 1 mg / minute.
7. If arrest reoccurs, revert back to appropriate protocol and/or initial successful treatment
8. **Contact medical control as soon as feasible.**
9. Consider other treatment protocols as necessary

**Pearls:**

- Most patients immediately post resuscitation will require ventilatory assistance
- The condition of post resuscitation patients may fluctuate rapidly and continuously, and, therefore, they require close monitoring.
- Avoid hyperthermia
- Avoid hyperventilation

# Pulmonary Edema

| History: | Signs/Symptoms: | Differential: |
|---|---|---|
| Congestive Heart Failure<br>Past Medical History<br>Medications (Digoxin, Lasix)<br>Viagra<br>Cardiac History – past<br>Myocardial infarction | Respiratory Distress, bilateral rales<br>Apprehension, orthopnea<br>Jugular vein distention<br>Pink, Frothy Sputum<br>Peripheral edema, diaphoresis<br>Hypotension, Shock<br>Chest Pain | Myocardial Infarction<br>Congestive Heart Failure<br>Asthma<br>Anaphylaxis<br>Aspiration<br>COPD<br>Pleural Effusion<br>Pneumonia<br>Pulmonary Embolus<br>Pericardial Tamponade |

1. Assess ABC's
2. Apply Oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply Cardiac Monitor and record rhythm strip.
4. Assess need for CPAP.
5. Administer Nitroglycerin x 1, if BP > 100 systolic.
6. Establish INT.
7. Administer Furosemide 40 mg slow IV push or twice patient's daily dose.
8. Consider additional Nitroglycerin q 2-5 minutes if BP > 100 systolic (up to 4 doses).
9. If symptoms unimproved, call OLMC to request orders for Morphine Sulfate 2-4 mg IV,
10. **Contact medical control as soon as feasible for additional Furosemide if patient already takes the medication.**
11. Consider Other Treatment Protocols as necessary

**Pearls:**

- Avoid Nitroglycerin in any patient who's used **Viagra, Cialis or Levitra** in the past **24** hours due to possible severe hypotension.
- If patient has taken Nitroglycerin without relief, consider potency of medication.
- Morphine may be repeated per physician's orders.
- Relative contraindications to Morphine include severe COPD and respiratory distress. Monitor the patient closely.
- Consider Myocardial Infarction in all these patients.
- Diabetics and geriatric patients often have atypical pain, or only generalized complaints.
- Careful monitoring of level of consciousness, BP and respiratory status with above interventions is essential.
- Allow the patient to be in their position of comfort to maximize their breathing effort.

# Pulseless Electrical Activity (PEA)

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Past medical History | Pulseless | Hypovolemia |
| Medications | Apneic | Hypoxemia |
| Events leading to arrest | Electrical activity on ECG | Hypothermia |
| End stage renal disease | | Hyper- Hypokalemia |
| Estimated Downtime | | Hydrogen ions |
| Suspected hypothermia | | Tablets |
| Suspected overdose | | Tamponade, cardiac |
| Tricyclics | | Tension Pneumothorax |
| Digitalis | | Thrombosis, coronary (ACS) |
| Beta Blockers | | Thrombosis, pulmonary (embolism) |
| Calcium channel blockers | | |
| DNR or Living Will | | |

1. Assess ABC's
2. Perform "Quick Look" with Paddles
3. Begin/Continue CPR for five (5) cycles, Ventilate via BVM.
4. Apply Cardiac Monitor and record rhythm strip.
5. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry. Consider LMA OR OTHER APPROVED ALTERNATE AIRWAY DEVICE if intubation is unsuccessful.
6. Establish IV Normal Saline at appropriate rate. Consider 2nd IV if hypovolemia suspected.
7. Administer 1 mg Epinephrine 1:10,000 IV /IO. May repeat every 3-5 minutes. May administer Vasopressin 40 U IV / IO in place of first or second Epinephrine dose.
8. Administer Atropine 1 mg IV, if rate < 60. If no IV is readily available, consider 2 mg via ET tube.
9. Obtain BGL:

   If BGL< 70; administer 25 grams of Dextrose 50% solution IV.

   If BGL> 70; continue with protocol.

   Consider 1 mg Glucagon IM, if no IV site established.
10. Consider Chest Decompression, if known or highly suspected tension pneumothorax.
11. Administer Sodium Bicarbonate @ 1 mEq/kg, if unknown downtime or > 15 minutes downtime, or if suspected Tricyclic overdose.
12. Consider Dopamine 5-20 mcg/mg/kg.
13. **Contact medical control as soon as feasible.**
14. Consider Discontinuation of efforts per policy.

**Pearls:**

- Consider each possible cause listed in the differential: Survival is based on identifying and correcting the cause.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.
- Common triciclics = Elavil, Triavil, Etrafon, Amitriptyline

# Respiratory Distress

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Asthma; COPD – Chronic Bronchitis, emphysema,<br>Congestive heart failure<br>Home treatment (oxygen, nebulizer)<br>Medications (theophylline, Steroids, inhalers)<br>Toxic exposure, smoke inhalation | Shortness of breath<br>Pursed lip breathing<br>Decreased ability to speak<br>Increased respiratory rate and effort<br>Wheezing, ronchi<br>Use of accessory muscles<br>Fever, cough<br>Tachycardia | Asthma<br>Anaphylaxis<br>Aspiration<br>COPD (Emphysema, bronchitis)<br>Pleural effusion<br>Pulmonary embolism<br>Pneumothorax<br>Cardiac (MI or CHF)<br>Pericardial Tamponade<br>Hyperventilation<br>Inhaled toxins |

1. Assess ABC's.
2. Administer oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV Normal Saline at appropriate rate. May consider INT.
5. Auscultate lungs for wheezing, rales and/or ronchi.
6. If signs & symptoms of CHF, proceed to Pulmonary Edema Protocol
7. Assess need for CPAP.
8. Administer Xopenex @ 1.25 mg with Atrovent @ 500 mcg via nebulizer.
9. **Contact medical control as soon as feasible.**
10. Consider repeat Xopenex @ 0.63 mg via nebulizer.
11. Consider Terbutaline 0.25 mg SQ.
12. Even if the patient experiences relief, he/she should receive Solumedrol @ 125 mg IV bolus.
13. Consider Epinephrine 1:1000 0.3-0.5 mg SQ or IM if no relief.
14. Consider other treatment protocols as necessary

**Pearls:**

- Status Asthmaticus – Severe prolonged asthma attack unresponsive to therapy – life threatening.
- Contact Medical Control prior to administering epinephrine to patient who are > 50 years of age, have a history of cardiac disease, or if the patient's heart rate is > 150. Epinephrine may precipitate cardiac ischemia.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- If Atrovent contacts the paramedic's face or eye, the med may produce a blown pupil for 2-3 days.

# Seizure

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Reported/ Witnessed Seizure activity | Decreased mental status | CNS (Head) Trauma |
| Previous seizure history | Sleepiness | Tumor |
| Medic Alert tag information | Incontinence | Metabolic, Hepatic, Renal failure |
| Seizure medications | Observed seizure activity | Hypoxia |
| History of Trauma | Evidence of Trauma | Electrolyte abnormality |
| History of Diabetes | | Drugs, medications, |
| History of pregnancy | | Non-compliance |
| | | Infection/ Fever |
| | | Alcohol withdrawal |
| | | Eclampsia |
| | | Stroke |
| | | Hyperthermia |

1. Assess ABC's.
2. Administer oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Consider spinal immobilization, if suspected trauma.
5. Establish IV Normal Saline. May consider INT.
6. Obtain BGL reading.

   If BGL< 70; Administer 25 grams of Dextrose 50% solution IV push.

   If BGL> 70; consider other causes.

   Consider 1 mg Glucagon IM if no patent IV site.
7. If patient is status epilepticus or seizure reoccurs, administer 2.0 – 4.0 mg Ativan slow IV push.
8. **Contact medical control as soon as feasible.**
9. If seizure continues after 4.0 mg of Ativan, contact OLMC to request orders for more Ativan.
10. Consider other treatment protocols as necessary.

**Pearls:**

- Status Epilepticus is defined as two or more consecutive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- Grand Mal seizures are associated with loss of consciousness, incontinence, and tongue trauma
- Focal seizures effect only a part of the body and are not usually associated with loss of consciousness
- Jacksonian seizures are seizures which start as a focal seizure and become generalized.
- Be prepared for airway problems and continued seizures
- Assess possibility of trauma and substance abuse
- Be prepared to assist ventilations, especially if Ativan is used.
- For any pregnant patient, follow the OB emergencies protocol.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.

# Supraventricular Tachycardia

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Medications (Aminophylline, Diet Pills, Thyroid supplements, Decongestants, Digoxin) | HR>150 BPM | Heart Disease (WPW, Valvular) |
| Diet (caffeine, chocolate) | QRS < 0.12 sec | Sick Sinus Syndrome |
| Drugs (nicotine, cocaine) | Dizziness, CP, SOB | Myocardial Infarction |
| Past medical history | Potential presenting rhythm | Electrolyte imbalance |
| History of palpitations/ heart racing | Sinus tachycardia | Exertion, pain, emotional stress |
| Syncope/ near syncope | Atrial Fibrillation/ Flutter | Fever |
| | Multifocal atrial tachycardia | Hypoxia |
| | | Hypovolemia or anemia |
| | | Drug effect/ Overdose |
| | | Hyperthyroidism |
| | | Pulmonary embolus |

1. Assess ABC's
2. Administer oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV Normal Saline at appropriate rate.
5. Obtain 12-lead ECG if available
6. If patient has no other S&S beyond heart rate, monitor and transport.
7. If patient presenting symptomatic (No palpable BP, altered LOC, CP, SOB, etc.), perform synchronized cardioversion 50j – 100j.
8. Consider 2.0 – 4.0 mg Ativan IV for sedation prior to cardioversion
9. If patient borderline symptomatic, attempt vagal maneuver(s)..
10. Consider Adenosine 12 mg rapid IV push with 10cc saline flush. May repeat twice at 1-2 minutes intervals.
11. If no change, consider Cardiazem at 25 mg IV.
12. **Contact medical control as soon as feasible.**
13. Consider repeat of Cardiazem at 10 mg/hr IV infusion if no response after 15 minutes.

**Pearls:**

- Adenosine may not be effective in identifiable atrial flutter/ fibrillation, yet is not harmful.
- Monitor for hypotension after administration of Cardiazem.
- Monitor for respiratory depression and hypotension associated with versed.
- Continuous pulse oximetry is required for all SVT patients.
- Obtain rhythm strips after all rhythm changes and after therapeutic interventions.
- Approved vagal maneuvers include coughing, straining as if attempting a bowel movement, perianal digital massage and attempting to "inflate" a glass bottle. ***Carotid sinus massage is not approved.***
- Cardizem drip = 25 mg / 250 ml @ 100 gtts w/ 60 drop set.

# Suspected Stroke

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Previous CVA, TIA's | Altered mental status | See altered mental status |
| Previous cardiac/ vascular surgery | Weakness/ Paralysis | TIA |
| Associated diseases; diabetes, Hypertension, CAD | Blindness or other sensory loss | Seizure |
| Atrial Fibrillation | Aphasia, Dysarthria | Hypoglycemia |
| Medications (blood thinners) | Syncope | Stroke |
| History of trauma | Vertigo/ Dizziness | Thrombotic |
| | Vomiting | Embolic |
| | Headache | Hemorrhagic |
| | Seizures | Tumor |
| | Respiratory pattern change | Trauma |
| | Hypertension/ hypotension | |

1. Assess ABC's.
2. Administer oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV Normal Saline KVO rate. May consider INT.
5. Obtain BGL reading:

   If BGL< 70; administer 12.5 grams of Dextrose 50% solution IV push and repeat BGL.
   If BGL> 70; proceed with protocol.
   Consider 1 mg Glucagon IM if no patent IV present..
6. Complete MEND checklist.
7. **Contact medical control as soon as feasible.**
8. Consider other treatment protocols as necessary.

**Pearls:**

- With duration of symptoms of less than 3 hours, scene times and transport times should be minimized.
- Onset of symptoms is defined as the last witnessed time the patient was symptom free. (i.e. awakening with stroke symptoms would be defined as an onset time of the previous night when the patient was symptom free.)
- The Differential listed on the Altered Mental Status Protocol should also be considered
- Elevated blood pressure is commonly present with stroke. Consider treatment if diastolic is > 120 mmHg
- Be alert for airway problems (swallowing difficulties, vomiting)
- Hypoglycemia can present as a localized neurological deficit, especially in the elderly.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.

# Syncope

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Cardiac history, stroke, Seizures<br>Occult blood loss (GI, ectopic)<br>Females; LMP, vaginal bleeding<br>Fluid loss; nausea, vomiting<br>Diarrhea<br>Past medical history | Loss of consciousness with recovery<br>Lightheadedness, dizziness<br>Palpitations, slow or rapid pulse<br>Pulse irregularity<br>Decreased blood pressure | Vasovagal<br>Orthostatic hypotension<br>Cardiac syncope<br>Micturation/ Defecation syncope<br>Psychiatric<br>Stroke<br>Hypoglycemia<br>Seizure<br>Shock<br>Toxicological (Alcohol)<br>Medication effect (hypertension) |

1. Assess ABC's
2. Administer oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Spinal Immobilization, if known or suspected trauma.
5. Establish IV Normal Saline KVO rate. May consider INT.
6. Obtain BGL reading.

   If BGL< 70; administer 25 grams of Dextrose 50% solution IV push.
   If BGL> 70; proceed with protocol.
   May consider 1 mg Glucagon IM, if no patent IV present.
7. If patient is bradypneic or apneic, consider 2.0 mg Narcan slow IVP.
8. **Contact medical control as soon as feasible.**
9. Consider other treatment protocols as necessary.

**Pearls:**

- Assess for signs and symptoms of trauma if associated or questionable fall with syncope.
- Consider dysrhythmias, GI bleed, ectopic pregnancy, and seizure as possible causes of syncope.
- These patients should be transported.
- More than 25% of geriatric syncope is cardiac dysrhythmia based.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.

# Ventricular Ectopy (PVC's)

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Past Medical History | Symptomatic: | Artifact/ Device failure |
| Medications, diet, drugs | PVC's > 6 per min | Cardiac |
| Palpitations | PVC's that fall on T wave | Endocrine/ Metabolic |
| Pacemaker | Bigeminy PVC's with rate > 60 | Drugs |
| Syncope/ near syncope | PVC's in pairs or runs of ≥ 3 | Pulmonary |
| Allergies: lidocaine/novacaine | Multifocal PVC's | |
| | Decreased LOC | |
| | Hypotensive | |
| | Associated with Chest Pain | |

1. Assess ABCs.
2. Apply oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV Normal Saline at appropriate rate or consider INT.
5. If patient is symptomatic with adequate heart rate, administer Lidocaine at 1.0-1.5 mg/kg IV push.
6. May repeat Lidocaine at 0.5 mg/kg q 3 - 5 minutes to max dose of 3 mg/kg.
7. If patient hypersensitive to Lidocaine or is refractory, administer Procainamide at 20 - 50 mg/minute IV. Base dosage on age and size of the patient; the older and smaller the patient, the greater the dosage should be, up to 50 mg/minute.
8. Begin drip infusion of drug that eases PVC's at appropriate rate.
9. If patient bradycardic with symptomatic PVC's, administer 0.5-1.0 mg Atropine. May consider repeat of Atropine to max total dose of 0.4 mg/kg.
10. If no response to Atropine, consider transcutaneous pacing.
11. **Contact medical control as soon as feasible.**
12. Consider other treatment protocols as necessary.

**Pearls:**

- Monitor patient for signs and symptoms of Lidocaine toxicity (Altered LOC, irritability, muscle twitching, seizures)
- **Reduce the dosage of Lidocaine by ½ for patients ≥ 70 years of age or with history of hepatic disease, or in shock.**
- End-points of Procainamide administration: Dysrhythmia resolved, hypotension, max dose of 17 mg/kg achieved or the QRS complex is widened by 50%.
- Lidocaine Infusion: 2 – 4 mg/minute. Procainamide Infusion: 1 – 4 mg/minute.

*****NOTE: The heart association recommends that we not treat ventricular ectopy in the field. We can delete this protocol or leave it in…it's up to you.**

# Ventricular Fibrillation/ Pulseless V. Tach

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Estimated down time | Unresponsive, apneic, pulseless | Asystole |
| Past medical history | Ventricular fibrillation or ventricular tachycardia on ECG | Artifact/ Device failure |
| Medications | | Cardiac |
| Events leading to arrest | | Endocrine/ metabolic |
| Renal failure/ dialysis | | Drugs |
| DNR or Living Will | | Pulmonary |

1. Assess ABC's
2. Perform "Quick Look" with paddles or pads. Five (5) cycles of CPR if unwitnessed arrest.
3. Defibrillate at 200j in bi-phasic voltage. Defibrillate at 360j in monophasic voltage.
4. Continue CPR for five (5) cycles and ventilation via BVM.
5. Apply cardiac monitor and record rhythm strip. Repeat defibrillation at 200j or higher (biphasic voltage) or 360j (monophasic voltage).
6. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry. Consider LMA OR OTHER APPROVED ALTERNATE AIRWAY DEVICE, if unsuccessful.
7. Establish IV Normal Saline.
8. Administer 1 mg Epinephrine 1:10,000 IV; Repeat q 3-5 minutes. May administer Vasopressin 40 U IV / IO in place of first or second Epinephrine dose.
9. Administer Lidocaine 1-1.5 mg/kg or Amiodarone 300 mg IV/IO diluted 20-30 cc of NS. May repeat Lidocaine q 3-5 minutes to a total dose of 3 mg/kg. (Can administer up to 3 mg/kg via ET tube). May repeat Amiodarone once at 150 mg in five (5) minutes.
10. Administer Magnesium Sulfate 1-2 gram IV push with Torsades de Pointes or suspected hypomagnesemic state or refractory v-fibrillation.
11. Administer lidocaine 1.5 mg / kg, repeat once in five (5) minutes.
12. Consider Sodium Bicarbonate 1 mEq/kg IV in prolonged arrest or unknown down time.
13. After resuscitation, hang an infusion of the dysrhythmic medication last administered.
14. **Contact medical control as soon as feasible.**
15. Consider termination of efforts per policy.

**Pearls:**

- Reassess and document endotracheal tube placement and ET $CO_2$ frequently, at every move, and at transfer of patient.
- If defibrillation is successful and patient re-arrests, return to previously successful energy level.
- Defibrillation takes precedent over all treatment once the defibrillator is available.
- Lidocaine Infusion: 2 – 4 mg/minute.

# Ventricular Tachycardia with Pulse

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Past Medical History | Ventricular Tachycardia on ECG | Artifact/ Device failure |
| Medications, diet, drugs | (Runs or sustained) | Cardiac |
| Syncope/ near syncope | Conscious, rapid pulse | Endocrine/ Metabolic |
| Palpitations | Chest pain, SOB | Drugs |
| Pacemaker | Dizziness | Pulmonary |
| Allergies: lidocaine/novacaine | Rate usually 150-180 BPM for sustained | |

1. Assess ABCs.
2. Apply oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip. Obtain 12-lead ECG if available ASAP.
4. Establish IV Normal Saline at appropriate rate or consider INT.
5. If patient is stable, administer Amiodarone 150 mg IV/IO over 10 minutes.
6. May repeat Amiodarone at 150 mg over 10 minutes to a max dose of 2.2 gm in 24 hours.
7. If Amiodarone is unavailable, give Lidocaine 1.5 mg/kg. Repeat 0.75 mg/kg in five (5) minutes.
8. Administer infusion of medication that converts rhythm at appropriate rate.
9. If patient unstable, perform synchronized cardioversion. May consider 2 - 4 mg Ativan IV push prior to cardioversion for sedation.
10. Consider Magnesium Sulfate 1 – 2 grams IV if patient presents with polymorphic V-Tach (Torsades de Pointes).
11. **Contact medical control as soon as feasible.**
12. After resuscitation, hang an infusion of the dysrhythmic medication last administered.
13. Consider other treatment protocols as necessary.

**Pearls:**

- Cardioversion should be performed progressively at 100, 200, 300, 360 joules or equivalent bi-phasic voltage.
- For witnessed/ monitored ventricular tachycardia, try having patient cough or deliver pre-cordial thump.
- Lidocaine Infusion: 2 – 4 mg/minute.

# Vomiting and Diarrhea

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Age | Pain | CNS (increased pressure, headache, stroke, CNS, lesions, trauma, or hemorrhage, vestibular) |
| Time of last meal | Character of pain (constant, intermittent, sharp, dull, etc) | Myocardial infarction |
| Last bowel movement/ emesis | Distention | Drugs (NSAID's, antibiotics, narcotics, chemotherapy) |
| Improvement or worsening | Constipation | GI or Renal disorders |
| With food or activity | Diarrhea | Diabetic ketoacidosis |
| Duration of problem | Anorexia | Gynecological disease (ovarian cyst, PID) |
| Other sick contacts | Radiation | Infections (pneumonia, influenza) |
| Past medical history | Associated symptoms (helpful to localize source) | Electrolyte abnormalities |
| Past surgical history | Fever, headache, blurred vision, weakness, malaise, myalgias, cough dysuria, mental, status changes, rash | Food or toxin induced |
| Medications | | Medications or substance abuse |
| Menstrual history (pregnancy) | | Pregnancy |
| Travel history | | Psychologic |

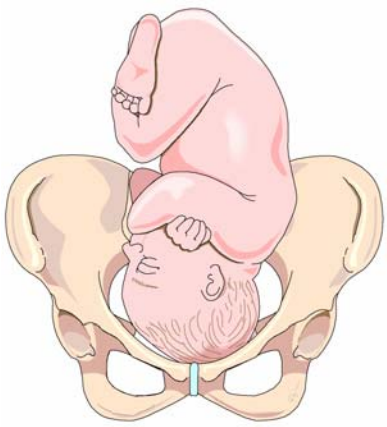
1. Assess ABCs.
2. Apply oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV Normal Saline at appropriate rate. May consider PRN adapter.
5. Obtain BGL reading:

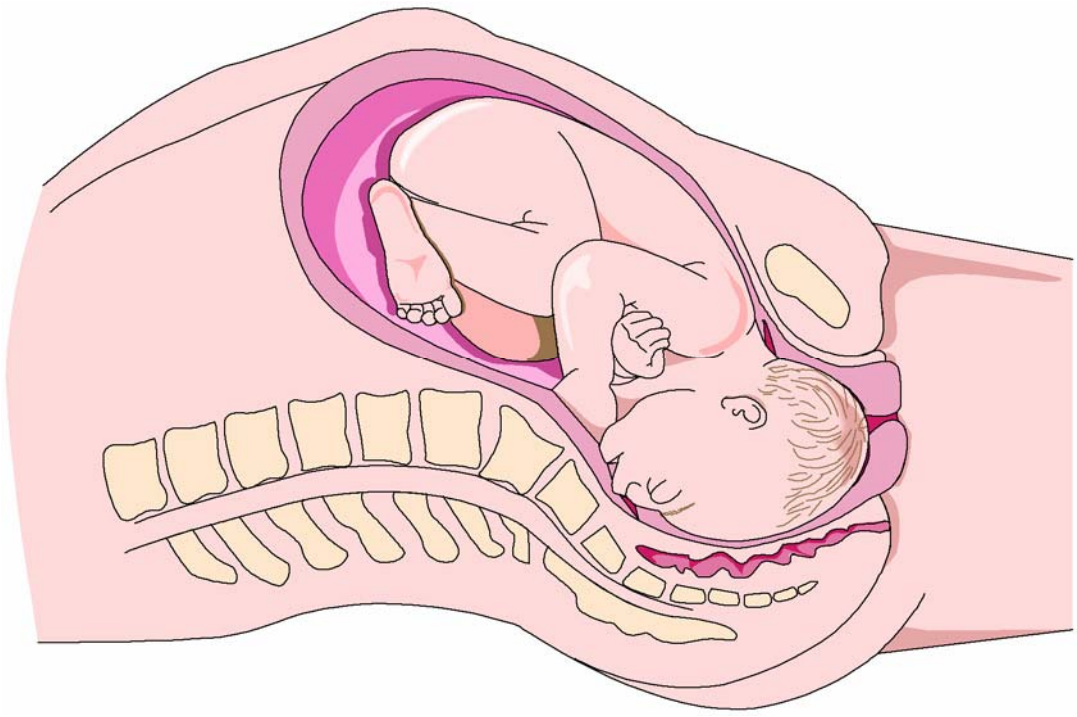
   If BGL< 70, administer 25 grams of Dextrose 50% solution
   If BGL> 70, continue with protocol
   Consider Glucagon 1mg IM if no IV present.
6. Consider 20 ml/kg fluid bolus, if systolic BP < 90 mm if lungs are clear.
7. Administer 12.5-25 mg Phenergan Slow IV push.
8. **Contact medical control as soon as feasible.**
9. Consider other treatment protocols as necessary.

**Pearls:**

- Document the mental status and vital signs prior to and post administration of Phenergan.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.

# Pediatric/OB





# Protocols

For the purpose of these protocols, a pediatric patient is defined as less than 12 years of age or under 55 kg.

# Childbirth/ Labor

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Due Date<br>Time contractions started/<br>How often<br>Rupture of membranes<br>Time/ amount of any vaginal<br>Bleeding<br>Sensation of fetal activity<br>Past medical and delivery history<br>Medications | Spasmodic pain<br>Vaginal discharge or bleeding<br>Crowning or urge to push<br>Meconium | Abnormal presentation<br>buttock<br>foot<br>hand<br>Prolapsed cord<br>Placenta previa<br>Abruptio placenta |

1. Assess ABCs.
2. Place patient in left lateral recumbent position.
3. Apply oxygen, assist ventilation via BVM, if indicated.
4. Apply cardiac monitor and record rhythm strip. Apply Pulse oximetry.
5. Determine frequency and duration of contractions. Inspect perineum for crowning.
6. Establish IV Normal Saline. Administer 200cc fluid bolus then KVO rate.
7. If abnormal delivery (abnormal presentation, breech, prolapsed cord, limb presentation), proceed to Abnormal Childbirth Protocol.
8. If delivery imminent, proceed with delivery.
9. Support head/perineum to prevent explosive delivery.
10. Suction the baby's mouth first, then nose as soon as the head delivers.
11. Check for cord around neck. If present, gently attempt to slip it over the neonate's head. If not able to remove cord, clamp and cut cord.
12. Hold and support infant during delivery.
13. Dry infant quickly and place in skin-to-skin contact with mother while keeping both warm.
14. APGAR score at 1 and 5 minutes.
15. When cord ceases pulsating, clamp at 10 and 7 inches from umbilicus, cut cord between clamps.
16. Begin fundal massage.
17. Monitor for placenta delivery while en route to hospital.
18. **Contact medical control as soon as feasible.**

**Pearls:**
- Document all times (delivery, contraction frequency and length)
- If maternal seizures occur, proceed to the obstetrical emergencies protocol.
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.

# New Born

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Due date and gestational age | Respiratory distress | Airway failure |
| Multiple gestations (twins, etc.) | Peripheral cyanosis or mottling | Secretions |
| Meconium | (normal) | Respiratory drive |
| Delivery difficulties | Central cyanosis (abnormal) | Infection |
| Congenital disease | Altered level of responsiveness | Maternal medication effect |
| Medications (maternal) | Bradycardia | Hypovolemia |
| Maternal risk factors | | Hypoglycemia |
| Substance abuse | | Congenital heart disease |
| Smoking | | Hypothermia |

1. Assess ABC's.
2. Dry infant and keep warm. Bulb syringe suction mouth/ nose.
3. Stimulate infant and note APGAR score.
4. Apply oxygen if indicated via blow-by as tolerated.
5. Apply cardiac monitor and record rhythm strip. Apply pulse oximetry.
6. Assess heart rate.
7. If HR < 100; Ventilate 30 seconds via BVM at 40-60 breaths/minute; reassess heart rate and APGAR; Continue with appropriate level of protocol.

**Heart < 60 after stimulation and ventilatory assistance**

1. Continue BVM ventilation with 100 % oxygen.
2. Begin chest compressions.
3. If no improvement after 30 seconds, intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
4. Establish IV Normal Saline following IV protocol.
5. Obtain BGL reading

   If BGL< 70: Administer Dextrose 10% at 0.5ml/kg slow IV push.

   If BGL> 70: Continue with protocol.

   May consider Glucagon 0.1 mg/kg IM to max dose of 1 mg.
6. Consider Epi 1:10,000 at 0.01 mg/kg IV or 1:1000 at 0.02 mg/kg ET flushed with 2 ml saline.
7. Consider Fluid bolus at 10mL/kg. May be repeated to total dose of 60 ml/kg as long as lungs remain clear.
8. Consider Narcan at 0.1 mg/kg, if known or suspected substance abuse by mother.
9. **Contact medical control as soon as feasible.**

# New Born – Continued

**Heart Rate 60-100**

1. Continue assisting ventilation via BVM. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
2. Stimulate infant.
3. Heart rate < 60 after 30 seconds; return to previous level of treatment.
4. Heart rate >100 after 30 seconds; continue with protocol.
5. Establish IV normal Saline.
6. Obtain BGL reading.

   If BGL< 70; administer Dextrose 10% at 0.5 ml/kg.

   If BGL> 70; continue with protocol.

   May consider Glucagon 0.1 mg/kg IM to max dose of 1 mg if no IV available..
7. Consider fluid bolus at 10ml/kg. May be repeated to total dose of 60 ml/kg as long as lungs remain clear.
8. Consider Narcan at 0.1 mg/kg, if known or suspected substance abuse by mother.
9. **Contact medical control as soon as feasible.**

**Heart rate > 100**

1. Continue oxygen via blow-by. Avoid the patient's eyes to prevent oxygen toxicity difficulties.
2. Obtain BGL reading.

   If BGL< 70; administer Dextrose 10% at 0.5 ml/kg.

   If BGL> 70; continue with protocol.

   May consider Glucagon 0.1 mg/kg IM to max dose of 1 mg if no IV available.
3. Monitor patient for change. Reassess APGAR at 5 minutes.
4. **Contact medical control as soon as feasible.**

**Pearls:**

- Maternal sedation or narcotics will sedate infant (Naloxone may be effective).
- Consider hypoglycemia in infant.
- Use cord blood, if possible to determine neonate's BGL.
- Document 1 and 5 minute APGAR scores.
- Make D10W by adding 2 ml of D50W to 8 ml of Normal Saline in a 10 ml syringe.

# Abnormal Childbirth/ Labor

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Due Date<br>Time contractions started/<br>How often<br>Rupture of membranes<br>Time/ amount of any vaginal<br>Bleeding<br>Sensation of fetal activity<br>Past medical and delivery history<br>Medications | Spasmodic pain<br>Vaginal discharge or bleeding<br>Crowning or urge to push<br>Meconium | Abnormal presentation<br>buttock<br>foot<br>hand<br>Prolapsed cord<br>Placenta previa<br>Abruptio placenta |

1. Assess ABC's
2. Position mother in left lateral recumbent position to prevent supine hypotensive syndrome
3. Apply oxygen; assist ventilations via BVM if indicated. Apply Pulse oximetry.
4. Apply cardiac monitor and record rhythm strip.
5. Establish IV Normal Saline.
6. Administer 200 cc fluid bolus then KVO rate.

**Breech Birth**

7. Allow spontaneous delivery with support of presenting part and perineum until legs and trunk delivered. Then assist head gently
8. If head not delivered within 4 minutes, insert a gloved hand into the vagina and form a "V" airway around infant's nose and mouth.

**Prolapsed Cord**

9. Position mother in knee-chest position on the stretcher
10. Insert gloved hand into the vagina to push presenting part of baby off the cord to ensure continued circulation through the cord. You should be able to palpate a pulse in the cord.
11. Cover the exposed cord with a moist dressing.
12. Continue until relieved at the hospital.

**Limb Presentation**

13. Position mother with hips elevated

**All Conditions**

14. Transport immediately
15. **Contact medical control as soon as feasible.**
16. Consider other treatment protocols as necessary

**Pearls:**

- Document all times (delivery, contraction frequency and length)
- If maternal seizures occur, proceed to the obstetrical emergencies protocol.
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.

# Obstetrical Emergency

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Past medical history | Vaginal bleeding | Pre-eclampsia/Eclampsia |
| Hypertension meds | Abdominal pain | Placenta previa |
| Prenatal care | Seizures | Placenta Abruptio |
| Prior pregnancies/ births | Hypertension | Spontaneous abortion |
| Gravida/ Parity | Severe headache | |
| | Visual changes | |
| | Edema to hands and face | |

1. Assess ABC's.
2. Apply oxygen, assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV Normal Saline at appropriate rate. May consider INT.
5. If known or suspected pregnancy, place patient in left lateral recumbent position.
6. If evidence of fluid loss or dehydration, administer 200 cc fluid bolus for mother.
7. Obtain BGL reading.

   If BGL< 70, administer 25 grams of Dextrose 50% solution IV push.
   If BGL> 70, continue with protocol.
   May consider Glucagon 1 mg IM, if no patent IV present if no IV is available.
8. If patient presents with seizures or seizure-like activity, administer 1-2 grams Magnesium Sulfate slow IV push.
9. **Contact medical control as soon as feasible.**
10. May consider Ativan 2 - 4 mg slow IV push for seizure activity.
11. Consider other treatment protocols as necessary

**Pearls:**

- Severe headache, vision changes, or RUQ pain may indicate pre-eclampsia.
- In the setting of pregnancy, hypertension is defined as a BP > 140 systolic or greater than 90 diastolic, or a relative increase of 30 systolic and 20 diastolic from the patient's normal BP.
- Maintain left lateral recumbent to prevent supine hypotensive syndrome.
- Ask patient to quantify bleeding – number of pads used per hour.
- Any pregnant female involved in an MVA should be seen immediately by a physician for evaluation and fetal monitoring.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.

# Pediatric Bradycardia

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Past medical history | Decreased heart rate | Respiratory effort |
| Foreign body exposure | Delayed capillary refill or cyanosis | Respiratory obstruction |
| Respiratory distress or arrest | Mottled, cool skin | Foreign body/secretions |
| Apnea | Hypotension or arrest | Croup/epiglotitis |
| Possible toxic or poison | Altered LOC | Hypovolemia |
| Exposure | | Hypothermia |
| Congenital disease | | Infection/sepsis |
| Medication(maternal or infant) | | Medication or toxin |
| | | Hypoglycemia |
| | | Trauma |

1. Assess ABC's.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
3. Apply cardiac monitor and record rhythm strip. Apply pulse oximetry.
4. If patient asymptomatic, monitor for change.
   If symptomatic, continue with protocol.
   If heart rate < 60, begin CPR.
5. Establish IV Normal Saline at appropriate rate.
   Consider IO method for children with marked hypotension and peripheral IV access not established within 90 seconds or two attempts.
6. Administer 0.01 mg/kg Epinephrine 1:10,000 IVP/ IO (0.1 ml/kg, 1:10,000). May repeat every 3-5 minutes.
   If ET, the dose is 0.1 mg/kg Epinephrine 1:1000. Maximum dose is 1.0 mg.
7. Consider Atropine 0.02 mg/kg IV/IO.
   Minimum single dose is 0.1 mg. Max dose is 1.0 mg. May repeat once.
8. Obtain BGL reading.
   If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
   - **Dilute D50W 1:1 with sterile water, Ringer's Lactate, or Saline (2-4 ml/kg of D25 mixture)**

   If BGL> 70, continue with protocol.
   May consider Glucagon 0.1 mg/kg IV, if no IV access available. (max dose of 1 mg)
9. Consider fluid bolus at 20 ml/kg. May repeat to max total dose of 60 ml/kg.
10. Consider Narcan 0.1 mg/kg, if known or highly suspected narcotics involvement.
11. **Contact medical control as soon as feasible.**
12. Consider transcutaneous pacing.
13. Consider other treatment protocols as necessary.

**Pearls:**
- Most maternal medications pass through breast milk to the infant
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia

# Pediatric Head Trauma

| History: | Signs& Symptoms: | Differential: |
|---|---|---|
| Time of injury | Pain, swelling, bleeding | Skull fracture |
| Mechanism (blunt vs penetrating) | Altered mental status | Brain injury (concussion, contusion |
| Loss of Consciousness | Unconscious | hemorrhage or laceration) |
| Bleeding | Respiratory distress/ failure | Epidural hematoma |
| Past medical history | Vomiting | Subdural hematoma |
| Medications | Major traumatic mechanism of | Subarachnoid hemorrhage |
| Evidence for multi-trauma | injury | Spinal injury |
| | Seizure | Abuse |

1. Assess ABC's
2. Apply oxygen. Assist ventilation via BVM if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
3. Place patient in spinal immobilization
4. Assess AVPU responsiveness.
5. Establish IV Normal Saline KVO. May consider PRN adapter.

   Consider IO method for patients with marked hypotension and peripheral IV access not established within 90 seconds or 2 unsuccessful IV attempts.

6. If signs of brain stem herniation (unequal pupils, posturing); hyperventilate patient with 100% oxygen.
7. If seizure occurs; proceed to Pediatric Seizure Protocol.
8. Obtain BGL reading
   If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
   - **Dilute D50W 1:1 with sterile water, Ringer's Lactate, or Saline (2-4 ml/kg of D25 mixture)**

   If BGL> 70, continue with protocol
   May consider 0.1mg/kg Glucagon if no IV present. (max dose of 1mg)
9. Consider Narcan 0.1 mg/kg, if known or suspected narcotics involvement.
10. **Contact medical control as soon as feasible.**
11. Consider other treatment protocols as necessary.

**Pearls:**
- If GCS, 12, consider air transport and if GCS < 9 intubation should be anticipated. RSI is contraindicated for patients less than 18 years of age.
- Hyperventilate patient only if signs of herniation (blown pupil, posturing, bradycardia) (35per minute for infants & 25 per minute for children > 1 year)
- Increased ICP may cause hypertension and bradycardia (Cushing's response)

# Pediatric Hypotension/Shock (Non-Trauma)

| History: | Signs& Symptoms: | Differential: |
|---|---|---|
| Blood loss | Restlessness, confusion, | Trauma |
| Fluid loss | weakness | Infection |
| Vomiting | Dizziness | Dehydration |
| Diarrhea | Increased HR, rapid pulse | Vomiting |
| Fever | Decreased BP | Diarrhea |
| Infection | Pale, cool, clammy skin | Fever |
| | Delayed capillary refill | Congenital heart disease |
| | | Medication or toxin |

1. Assess ABC's.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV Normal Saline. Consider second IV Normal Saline if patient hypotensive. Consider IO method for patients with marked hypotension and peripheral IV access not established within 90 seconds or 2 unsuccessful IV attempts.
5. Obtain BGL reading
   If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
   - **Dilute D50W 1:1 with sterile water, Ringer's Lactate, or Saline (2-4 ml/kg of D25 mixture)**

   If BGL> 70, continue with protocol;
   May consider 0.1mg/kg Glucagon if no IV present. (max dose of 1mg)
6. Consider Normal Saline bolus at 20 ml/kg. May repeat to total dose of 60 ml/kg.
7. **Contact medical control as soon as feasible.**
8. Consider 5-20 mcg/kg/min Dopamine infusion.

**Pearls:**

- Consider all possible causes of shock and treat per appropriate protocol.
- Decreasing heart rate is a sign of impending collapse.
- Most maternal medications pass through breast milk to the infant.

# Pediatric Multiple Trauma

| History: | Signs& Symptoms: | Differential: |
|---|---|---|
| Time and mechanism of injury | Pain, swelling | Chest – Tension pneumothorax |
| Damage to structure or vehicle | Deformity, lesions, bleeding | flail chest, pericardial tamponade |
| Location in structure or vehicle | Altered mental status | Open chest wound, hemothorax |
| Others injured or dead | Unconscious | Intra-abdominal bleeding |
| Speed and details of MVC | Hypotension or shock | Pelvis/ Femur fracture |
| Restraints/ Protective equipment | Arrest | Spine fracture/ cord injury |
| Car seat | | Head injury |
| Helmet | | Extremity fracture/ dislocation |
| Pads | | HEENT |
| Ejection | | Hypothermia |
| Past medical history | | |
| Medications | | |

1. Assess ABCs.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
3. Apply cardiac monitor and record rhythm strip.
4. Place patient in spinal immobilization.
5. Establish IV Normal Saline. Consider second IV Normal Saline, if patient hypotensive. Consider IO method for patients with marked hypotension and peripheral IV access not established within 90 seconds or 2 unsuccessful IV attempts.
6. Consider fluid bolus at 20 ml/kg. May be repeated to total dose of 60 ml/kg as long as lungs are clear.
7. If known or highly suspected tension pneumothorax, perform chest decompression.
8. **Contact medical control as soon as feasible.**
9. Consider other treatment protocols as necessary.

**Pearls:**
- Mechanism is the most reliable indicator of serious injury. Examine all restraints/ protective equipment for damage.
- In prolonged extrications or serious trauma, consider air transportation for transport times and ability to give blood.
- Do not overlook the possibility for child abuse.

# Pediatric Pulseless Arrest
# Asystole/ PEA

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Time of arrest<br>Medical history<br>Possibility of foreign body<br>Hypothermia | Unresponsive<br>Cardiac Arrest | Respiratory failure<br>Foreign Body, Secretions<br>Infections (croup, epiglotitis)<br>Hypovolemia (dehydration)<br>Congenital heart disease<br>Trauma<br>Tension pneumothorax<br>Hypothermia<br>Toxin or medication<br>Hypoglycemia<br>Acidosis |

1. Assess ABC's
2. Perform "Quick Look" with pediatric paddles or pads. Confirm Asystole in 2 leads.
3. Begin CPR with 100% oxygen via BVM.
4. Apply cardiac monitor and record rhythm strip. Apply pulse oximetry.
5. Perform endotracheal intubation. Confirm placement. Reassess tube placement every few minutes and after every patient move. Apply End Tidal CO2 detector or similar device if available.
6. Establish IV Normal Saline.
   Consider IO method for patients < 6 y.o. with marked hypotension and peripheral IV access not established within 90 seconds or 2 unsuccessful IV attempts.
7. Obtain BGL reading
   If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
   - **Dilute D50W 1:1 with sterile water, Ringer's Lactate, or Saline (2-4 ml/kg of D25 mixture)**

   If BGL> 70, continue with protocol
   May consider 0.1mg/kg Glucagon if no IV present (max dose of 1 mg)
8. Administer fluid bolus at 20 mL/kg. May be repeated to total dose of 60 mL/kg
9. Administer 0.01 mg/kg Epinephrine 1:10,000 IV/IO (0.1 ml/kg, 1:10,000). If no IV/IO access, consider 0.1 mg/kg Epinephrine 1:1000 via ET tube. Repeat every 3-5 minutes with Epinephrine 1:1000. Maximum total dose 15 mg.
   Consider 0.1 mg/kg Narcan, if known or suspected drug involvement.
10. **Contact medical control as soon as feasible.**

**Pearls:**
- Attempt to identify at treat cause of arrest: hypoxemia, acidosis, volume depletion, hypothermia, hypoglycemia
- Airway is the most important intervention. This should be accomplished immediately.

# Pediatric Pulseless Arrest
# Ventricular Fib/Ventricular Tach

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Time of arrest<br>Medical history<br>Possibility of foreign body<br>Hypothermia | Unresponsive<br>Cardiac Arrest | Respiratory failure<br>Foreign Body, Secretions<br>Infections (croup, epiglotitis)<br>Hypovolemia (dehydration)<br>Congenital heart disease<br>Trauma<br>Tension pneumothorax<br>Hypothermia<br>Toxin or medication<br>Hypoglycemia<br>Acidosis |

1. Assess ABC's.
2. Perform "Quick Look" with pediatric paddles or pads.
3. Defibrillate at 2 joules.
4. Continue CPR for five (5) cycles. Ventilate with 100% oxygen via BVM.
5. Defibrillate @ 4 joules.
6. Perform endotracheal intubation. Confirm placement. Reassess tube placement every few minutes and after every patient move. Apply End Tidal CO2 detector or similar device if available.
7. Establish IV Normal Saline.
   Consider IO method for patients with marked hypotension and peripheral IV access not established within 90 seconds or 2 unsuccessful IV attempts.
8. Obtain BGL reading
   If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
   - **Dilute D50W 1:1 with sterile water, Ringer's Lactate, or Saline (2-4 ml/kg of D25 mixture)**

   If BGL> 70, continue with protocol.
   May consider 0.1mg/kg Glucagon if no IV present. (max dose of 1 mg)
9. Administer 0.01 mg/kg Epinephrine 1:10,000 IV/IO (0.1 ml/kg, 1:10,000). If no IV/IO access, consider 0.1 mg/kg Epinephrine 1:1000 via ET tube. Repeat every 3-5 minutes with Epinephrine 1:1000.
10. Continue CPR for five (5) cycles.
11. Repeat defibrillation @ 4 joules.
12. **Contact medical control as soon as feasible.**
13. Consider Amiodarone 5 mg/kg IV/IO or Lidocaine 1 mg/kg IV/IO.

**Pearls:**
- Attempt to identify at treat cause of arrest: hypoxemia, acidosis, volume depletion, hypothermia, hypoglycemia
- Airway is the most important intervention. This should be accomplished immediately.

# Pediatric Respiratory Distress

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Time of onset | Wheezing or stridor | Asthma |
| Possibility of foreign body | Respiratory retractions | Aspiration |
| Medical history | Increased heart rate | Foreign body |
| Medications | Altered LOC | Infection |
| Fever or respiratory infection | Anxious appearance | Pneumonia, croup, epiglotitis |
| Other sick siblings | | Congenital heart disease |
| History of trauma | | Medication or toxin |
| | | Trauma |

1. Assess ABC's
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
3. Apply cardiac monitor and record rhythm strip.
4. Establish IV Normal Saline. May consider PRN adapter. At medic's discretion dependant upon level of distress.
5. If wheezing present, administer Albuterol @ 5 mg via nebulizer.
6. **Contact medical control as soon as feasible.**
7. Repeat Albuterol @ 5 mg via nebulizer.
8. Consider 0.01 mg/kg Epinephrine 1:1000 for severe respiratory distress.
9. Even if the patient experiences relief, he/she should receive Solumedrol @ 1 mg/kg IV bolus.
10. Consider other treatment protocols as necessary.

**Pearls:**

- The most important component of respiratory distress is airway control.
- Croup typically affects children < 2 y.o. It is viral, possible fever, gradual onset, no drooling is noted.
- Epiglotitis typically affects children > 2 y.o. It is bacterial, with fever, rapid onset, possible stridor, patient wants to sit up to keep airway open. Drooling is common. Airway manipulation may worsen condition.

# Pediatric Seizure

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Fever<br>Prior history of seizures<br>Seizure medications<br>Reported seizure activity<br>History of recent head trauma<br>Congenital abnormality | Observed seizure activity<br>Altered mental status<br>Hot, dry skin, or elevated body temp | Fever<br>Infection<br>Head trauma<br>Medication or toxin<br>Hypoxia or respiratory failure<br>Hypoglycemia<br>Metabolic abnormality/acidosis<br>Tumor |

1. Assess ABC's.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
3. Apply cardiac monitor and record rhythm strip.
4. If patient is febrile, begin cooling measures.
5. Obtain BGL reading.
   If BGL< 70, administer 0.5 - 1.0 grams/kg, slow administration
   - **Dilute D50W 1:1 with sterile water, Ringer's Lactate, or Saline (2-4 ml/kg of D25 mixture)**

   If BGL> 70, continue with protocol.
   May consider 0.1mg/kg Glucagon if no IV present. (max dose of 1 mg)
6. Establish IV Normal Saline.
   Consider IO method for patients with marked hypotension and peripheral IV access not established within 90 seconds or 2 unsuccessful IV attempts.
7. **Contact medical control as soon as feasible.**
8. If patient experiences multiple seizures or is status epilepticus, administer 0.1 mg/kg Ativan IV/IO. (May consider Versed 0.1 mg/kg if Ativan is ineffective.)
9. Consider other treatment protocols as necessary

**Pearls:**
- Status Epilepticus is defined as two or more consecutive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- Grand Mal seizures are associated with loss of consciousness, incontinence, and tongue trauma
- Focal seizures effect only a part of the body and are not usually associated with loss of consciousness
- Jacksonian seizures are seizures which start as a focal seizure and become generalized.
- Be prepared for airway problems and continued seizures
- If evidence or suspicion of trauma, spinal immobilization should be performed
- Be prepared to assist ventilations, especially if Versed is used
- In an infant, a seizure may be only evidence of closed head injury

# Pediatric Supraventricular Tachycardia

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Past medical history | Heart rate: child > 180 bpm | Heart disease (congenital) |
| Medications or toxin ingestion | infant > 220 bpm | Hypo/Hyperthermia |
| (Aminophylline, diet pills, | Pale or cyanosis | Hypovolemia or anemia |
| thyroid supplements, | Diaphoresis | Electrolyte imbalance |
| decongestants, digoxin) | Tachypnea | Anxiety/ pain/ emotional stress |
| Drugs (nicotine, cocaine) | Vomiting | Fever/ infection/sepsis |
| Congenital heart disease | Hypotension | Hypoxia |
| Respiratory distress | Altered LOC | Hypoglycemia |
| Syncope/near syncope | Pulmonary congestion | Medication/toxin/ drugs |
| | Syncope | Pulmonary embolus |
| | | Trauma |
| | | Tension pneumothorax |

1. Assess ABC's.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry if available.
3. Apply cardiac monitor and record rhythm strip.

**Patient asymptomatic**

1. Monitor for deterioration and transport.

**Borderline symptomatic**

1. Attempt valsalva's maneuver
2. Establish IV Normal Saline.
   Consider IO method for patients with marked hypotension and peripheral IV access not established within 90 seconds or 2 unsuccessful IV attempts.
3. Consider Adenosine 0.1 mg/kg rapid IV/IO followed by 10 cc rapid fluid flush. Maximum single dose 6 mg. May be repeated at 0.2 mg/kg rapid IV/IO, if no response to initial dose.

**Symptomatic (No palpable pulse, Altered mental status)**

1. Establish IV Normal Saline.
   Consider IO method for patients with marked hypotension and peripheral IV access not established within 90 seconds or 2 unsuccessful IV attempts.
2. Consider 0.1 mg/kg Ativan for sedation prior to cardioversion

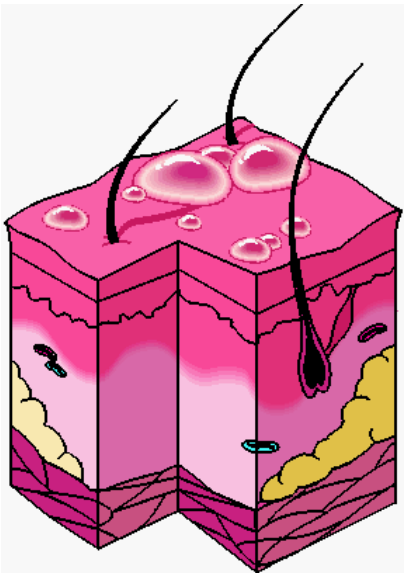
# Pediatric Supraventricular Tachycardia – Cont'd

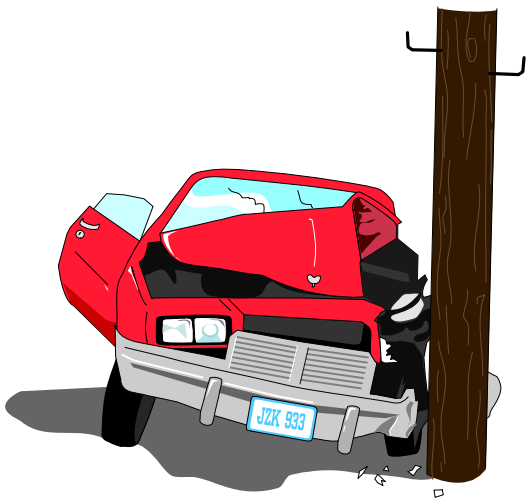
3. Synchronized cardioversion at 0.5 joule/kg - 1 joule/kg - 2 joules/kg or equivalent biphasic energy.
4. **Contact medical control as soon as feasible.**
5. Consider other treatment protocols as necessary

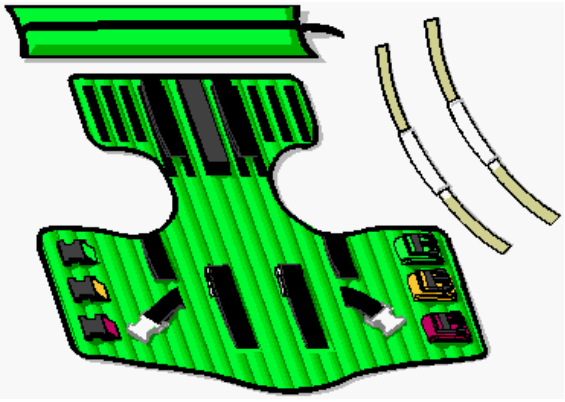
**Pearls:**

- Carefully evaluate the rhythm to distinguish Sinus Tachycardia, Supraventricular Tachycardia, and Ventricular Tachycardia
- Separating the child from the caregiver may worsen the child's clinical condition
- Pediatric paddles or pads should be used in children < 10kg or Broselow Tape color purple
- Monitor for respiratory depression and hypotension if Ativan or Versed is used.
- Continuous pulse oximetry is required for all SVT patients, if available.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.

# Trauma Protocols





# Transportation of Trauma Patients

- All "Trauma Alert" patients will be transported to the nearest trauma center.

- "Trauma Alert" patients are defined as patients having any one or more of the following:
  - A Revised Trauma Score of 10 or less
  - Penetrating trauma to the head, neck, torso, or extremities proximal to the knee or elbow
  - Combination of burns with trauma
  - Second or third degree burns involving 10% or greater body surface area
  - Two or more proximal long bone fractures
  - Pelvic fractures
  - Paralysis
  - Amputation proximal to the wrist or ankle
  - Ejection from a motor vehicle
  - Fall from a height of greater than ten (10) feet
  - Open fracture(s)
  - Potential head injury

- Significant burn patients should be evaluated for helicopter transportation to Augusta Burn Center in Augusta, Ga. Significant burns are defined as > 25% BSA; 3° burns > 10% BSA; 2° and 3° burns to face, eyes, hands, or feet; electrical burns; respiratory burns; deep chemical burns; burns with extremes of age or chronic disease; and/or burns with associated major traumatic injury.

- Transportation destinations for pediatric patients should also be addressed.

Services should develop specific criteria for continued ground transportation versus air transportation.

# Bites and Envenomations

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Type of bite/sting | Rash, skin break, wound | Animal bite |
| Description or bring creature/ | Pain, soft tissue swelling, redness | Human bite |
| Photo with patient for ID | Blood oozing from the bite wound | Snake bite (poisonous) |
| Time, location, size of bite/sting | Evidence of infection | Spider bite (poisonous) |
| Previous reaction to bite/sting | Shortness of breath, wheezing | Insect bite/sting |
| Domestic vs. wild | Allergic reaction, hives, itching | Infection risk |
| Tetanus and rabies risk | Hypotension or shock | Rabies risk |
| Immunocompromised patient | | Tetanus risk |

1. Assess ABC's.
2. Apply oxygen, if indicated. Assist ventilation via BVM if indicated. Apply Pulse oximetry.
3. Remove all jewelry and clothing from the affected extremity.
4. Immobilize bite area. Do Not Elevate.
5. Apply cardiac monitor and record rhythm strip.
6. Establish IV Normal Saline KVO rate. May consider INT adapter.
7. **Contact medical control as soon as feasible.**
8. Consider other treatment protocols as necessary.

**Pearls:**

- Human bites are worse than animal bites due to the normal mouth bacteria
- Carnivore bites are more likely to become infected and all have risk of rabies exposure.
- Cat bites may progress to infection rapidly due to a specific bacteria
- Poisonous snakes in this area are generally of the pit viper family: rattlesnake, copperhead, and water moccasin. Coral snake bites are rare: very little pain but very toxic.
- Amount of envenomation is variable, generally worse with larger snakes and early in Spring.
- If no pain or swelling – envenomation is unlikely
- Black Widow spider bites tend to be minimally painful, but over a few hours, muscular pain and severe abdominal pain may develop.
- Brown Recluse spider bites are minimally painful to painless. Little reaction is noted initially, but tissue necrosis at the site of bite develops over the next few days.
- Evidence of infection: swelling, redness, drainage, fever, red streaks proximal to wound.
- Immunocompromised patients are at an increased risk for infection: diabetes, chemotherapy, transplant patients.
- Consider contacting SC Poison Control for guidance. 800-922-1117

# Burns

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Type of exposure (heat, gas, Chemical) | Burns, pain, swelling | Superficial (1°)red and painful |
| Inhalation injury | Dizziness | Partial thickness (2°) blistering |
| Time of injury | Loss of consciousness | Full thickness (3°) painless and |
| Past medical history | Hypotension/shock | charred leathery skin |
| Medications | Airway compromise/distress | Chemical |
| Other trauma | Singed facial or nasal hair | Thermal |
| | Hoarseness/wheezing | Electrical |
| | | Radiation |

1. Assess ABC's.
2. Maintain patent airway. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Remove jewelry and clothing from affected area which is not adhering to the burn.
4. Cool the burn thoroughly with sterile irrigation fluid.
5. Assess burn depth and severity.
6. Establish IV Normal Saline. Rate sufficient to maintain Systolic BP > 90 mm Hg by administering 20 ml/kg fluid boluses as long as lungs are clear. Consider second IV Normal Saline. Avoid initiating IV's in affected area if possible.
7. Apply cardiac monitor and record rhythm strip. Electrodes may be placed on patient's back.
8. **Contact medical control as soon as feasible.**
9. Consider Nitrous Oxide for pain or consider requesting from OLMC orders for 2-4 mg Morphine IV for pain control.
10. Consider repeat of Morphine every 5 minutes for pain control as directed by OLMC.

**Pearls:**

- Critical burns: > 25% BSA; 3° burns > 10% BSA; 2° and 3° burns to face, eyes, hands, or feet; electrical burns; respiratory burns; deep chemical burns; burns with extremes of age or chronic disease; and burns with associated major traumatic injury. These burns may require hospital admission or transfer to a burn center.
- Early intubation is required in significant inhalation injuries.
- Potential CO exposure should be treated with 100% oxygen.
- Circumferential burns to extremities are dangerous due to potential vascular compromise 2° to soft tissue swelling.
- Burn patients are prone to hypothermia – never cool burns that involve > 15% BSA.
- Never overlook the possibility of multi system trauma.
- Do not overlook the possibility for child abuse with children and burn injuries.

# Drowning/Near Drowning

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Submersion in water regardless of depth<br>Possible history of trauma (ie. Diving board)<br>Duration of submersion<br>Temperature of water | Unresponsive<br>Mental status changes<br>Decreased or absent vital signs<br>Vomiting<br>Coughing | Trauma<br>Pre-existing medical problem<br>Pressure injury (diving)<br>Barotrauma<br>Decompression sickness |

1. Assess ABC's.
2. Perform Spinal Immobilization.
3. Begin CPR if indicated.
4. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
5. Apply cardiac monitor and record rhythm strip.
6. Go to appropriate specific rhythm protocol, if indicated.
7. Establish IV Normal Saline KVO rate. May consider PRN adapter.
8. If associated respiratory distress present, administer Albuterol 5.0 mg via nebulizer.
9. **Contact medical control as soon as feasible.**
10. Consider other treatment protocols as necessary.

**Pearls:**

- With cold water – no time limit – resuscitate all patients.
- All victims should be transported for evaluation due to potential for worsening over the next several hours.
- Drowning is a leading cause of death among would-be rescuers.
- Allow appropriately trained and certified rescuers to remove victims from areas of danger.
- With pressure injuries (decompression/barotrauma), consider transport or availability of hyperbaric chamber.

# Electrical Injuries

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Lightning or electrical exposure<br>Single or multiple victims<br>Trauma 2° to fall from high wire or MVC into line<br>Duration of exposure<br>Voltage and current (AC/DC) | Burns<br>Pain<br>Entry and exit wounds<br>Hypotension/ shock<br>Arrest | Cardiac arrest<br>Seizure<br>Burns<br>Multiple trauma |

1. Assess ABC's.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Apply Spinal Immobilization.
4. Apply cardiac monitor and record rhythm strip.
5. Establish IV normal Saline KVO rate. May consider INT.
6. Go to appropriate specific rhythm protocol as indicated.
7. Consider Nitrous Oxide for pain or consider requesting from OLMC orders for 2-4 mg Morphine IV for pain control.
8. **Contact medical control as soon as feasible.**
9. Consider other treatment protocols as necessary.

**Pearls:**

- Ventricular fibrillation and Asystole are the most common dysrhythmias
- Damage is often hidden; the most severe damage will occur in muscle, vessels and nerves
- In a mass casualty lightning incident, attend to victims in full arrest first. If the victim did not arrest initially, it is likely they will survive.
- Do not overlook other trauma (ie. Falls)
- Lightning is a massive DC shock most often leading to Asystole as a dysrhythmia
- In lightning injuries, most of the current will travel over the body surface producing flash burns over the body that appears as freckles.

# Extremity Trauma

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Type of injury<br>Mechanism: crush/penetrating amputation<br>Time of injury<br>Open vs Closed wound/fracture<br>Wound contamination<br>Medical history<br>Medications | Pain, swelling<br>Deformity<br>Altered sensation/ motor function<br>Diminished pulse/ capillary refill<br>Decreased extremity temperature. | Abrasion<br>Contusion<br>Laceration<br>Sprain<br>Dislocation<br>Fracture<br>Amputation |

1. Assess ABC's
2. Apply oxygen, if indicated. Assist ventilation via BVM, if indicated. Apply pulse oximetry.
3. Perform wound care, hemorrhage control.
4. Immobilize affected extremity.
5. Establish IV Normal Saline KVO rate. May consider INT. Consider bolus of 20 ml/kg Normal Saline to maintain systolic BP of >90 mm Hg.
6. If amputation; wrap amputated part in clean sterile dressing moistened with normal saline.
   Place in airtight container such as a plastic bag.
   Place container in water with a few ice cubes, if available
7. Consider Nitrous Oxide for pain or consider requesting from OLMC orders for 2-4 mg Morphine IV for pain control.
8. **Contact medical control as soon as feasible.**
9. Consider other treatment protocols as necessary

**Pearls:**

- In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined.
- Hip dislocations and knee and elbow fracture/dislocations have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise
- Blood loss may be concealed or not apparent with extremity injuries
- Lacerations must be evaluated for repair within 6 hours from the time of injury.

# Head Trauma

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Time of injury | Pain, swelling, bleeding | Skull fracture |
| Mechanism: blunt/penetrating | Altered mental status | Brain injury (concussion, contusion hemorrhage, or laceration) |
| Loss of consciousness | Unconscious | Epidural hematoma |
| Bleeding | Respiratory distress/failure | Subdural hematoma |
| Medical history | Vomiting | Subarachnoid hemorrhage |
| Medications | Significant mechanism of injury | Spinal injury |
| Evidence of multi – trauma | | Abuse |

1. Assess ABC's
2. Apply oxygen. Assist ventilation via BVM if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Place patient in spinal immobilization
4. Assess AVPU responsiveness.
5. Establish IV Normal Saline KVO. May consider PRN adapter
6. If signs of brain stem herniation (unequal pupils, posturing, bradycardia, HTN); hyperventilate patient with 100% oxygen for 2 – 3 minutes and then ventilate at a rate of 15 – 18 per minute.
7. If seizure occurs; proceed to Seizure Protocol.
8. Obtain BGL reading:

   If BGL< 70, administer 12.5 g Dextrose 50%, and then recheck BGL.

   If BGL> 70, continue with protocol

   May consider 1mg Glucagon if no IV present
9. **Contact medical control as soon as feasible.**
10. Consider other treatment protocols as necessary

**Pearls:**

- If GCS $\leq$ 12, consider air transport and if GCS $\leq$ 9 intubation should be anticipated.
- Hyperventilate patient only if signs of herniation (blown pupil, posturing, bradycardia)
- Increased ICP may cause hypertension and bradycardia (Cushing's response)
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively
- The most important item to monitor and document is a change in the LOC
- Consider restraints, if necessary, for patient's and/or personnel's protection per the Restraint Procedure.
- Limit IV fluids unless patient is hypotensive (systolic BP < 100)
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.

# Hyperthermia

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Age | Altered mental status or unconsciousness | Fever (infection) |
| Exposure to increased temperatures and/or humidity | Hot, dry, or sweaty skin | Dehydration |
| Past medical history/medications | Hypotension/ shock | Medications |
| Extreme exertion | Seizures | Hyperthyroidism (Storm) |
| Time and length of exposure | Nausea | Delirium Tremens (DT's) |
| Poor PO intake | | Heat cramps |
| Fatigue and/or muscle cramping | | Heat exhaustion |
| | | Heat stroke |
| | | CNS lesions or tumors |

1. Assess ABC's.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Obtain and document patient temperature.
4. Remove from heat source. Loosen or remove constrictive clothing.
5. Apply cardiac monitor and record rhythm strip.
6. Apply room temperature water to skin and increase airflow around patient.
7. Establish IV Normal Saline.
8. If the patient's Systolic BP falls below 90 mm Hg, administer saline bolus @ 20 ml/kg if lungs are clear. Repeat as needed.
10. Obtain BGL reading:

    If glucose < 70; administer 25 grams of Dextrose 50% solution IV push.

    If glucose > 70; proceed with protocol

    May consider 1 mg Glucagon IM, if no patent IV present.
11. Consider 2 mg Narcan IVP, if known or highly suspected narcotics involvement.
12. If seizures occur; go to Seizure Protocol.
13. **Contact medical control as soon as feasible.**
14. Consider other treatment protocols as necessary

**Pearls:**

- Extremes of age are more prone to heat emergencies (young and old).
- Cocaine, amphetamines, and salicylates may elevate body temperatures.
- Sweating generally disappears as body temperature rises above 104° F.
- Intense shivering may occur as patient is cooled.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.

# Hypothermia

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Past medical history | Cold, clammy | Sepsis |
| Medications | Shivering | Environmental exposure |
| Exposure to environment even in normal temperatures | Mental status changes | Hypoglycemia |
| Exposure to extreme cold | Extremity pain or sensory abnormality | CNS dysfunction |
| Extremes of age | Bradycardia | Stroke |
| Drug use: Alcohol, barbiturates | Hypotension/ shock | Head injury |
| Infections/Sepsis | | Spinal cord injury |
| Length of exposure/ wetness | | |

1. Assess ABC's.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Remove wet clothing. Handle patient gently. Begin body core warming process
4. Apply cardiac monitor and record rhythm strip
5. Establish IV Normal Saline.
6. Obtain BGL:

   If glucose < 70; administer 25 grams of Dextrose 50% solution IV push.

   If glucose > 70; proceed with protocol.

   May consider 1 mg Glucagon IM, if no patent IV present.
7. **Contact medical control as soon as feasible.**
8. Consider other treatment protocols as necessary.

**Pearls:**

- **NO PATIENT IS DEAD UNTIL THEY ARE WARM AND DEAD!!**
- Defined as core temperature < 95° F.
- Extremes of age are more susceptible (young and old).
- With temperature less than 88° F, ventricular fibrillation is common cause of death. Handling patients gently may prevent this.
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- Hypothermia may produce severe bradycardia.
- Shivering stops below 90° F.
- Hot packs can be activated and placed in the armpit and groin areas if available.
- Care should be taken not to place the packs directly against the patient's skin.
- For any hypoglycemic patient suspected of abusing alcohol, always administer 100 mg Thiamine before D50W.

# Multiple Trauma

| History: | Signs & Symptoms: | Differential: |
|---|---|---|
| Time and mechanism of injury<br>Damage to structure or vehicle<br>Location in structure or vehicle<br>Others injured or dead<br>Speed and details of MVC<br>Restraints/protective equipment<br>Past medical history<br>Medications | Pain, swelling<br>Deformity, lesions, bleeding<br>Altered mental status or unconscious<br>Hypotension/ shock<br>Arrest | Chest: Tension pneumothorax<br>Flail chest<br>Pericardial tamponade<br>Open chest wound<br>Hemothorax<br>Intra-abdominal bleeding<br>Pelvis/Femur fracture<br>Spine fracture/ cord injury<br>Head injury<br>Extremity fracture/ dislocation<br>HEENT(airway obstruction)<br>Hypothermia |

1. Assess ABC's.
2. Apply oxygen. Assist ventilation via BVM, if indicated. Intubate patient and confirm tube placement. Reconfirm tube placement every few minutes and after each patient move. Use End Tidal CO2 detector or similar device if available. Apply pulse oximetry.
3. Perform rapid trauma assessment.
4. Apply spinal immobilization.
5. Establish IV Normal Saline at rate appropriate to maintain systolic BP > 90. Consider second IV Normal Saline, if indicated.
6. Consider 20 ml/kg fluid bolus if lungs are clear. Repeated as needed to maintain BP > 90 systolic.
7. Obtain BGL reading:
   If BGL< 70, administer 12.5 g Dextrose 50%, and then recheck BGL.
   If BGL> 70, continue with protocol
   May consider 1mg Glucagon if no IV present
8. If known or highly suspected tension pneumothorax, perform chest decompression.
9. **Contact medical control as soon as feasible.**
10. Consider other treatment protocols as necessary

**Pearls:**

- In prolonged extrications or serious trauma, consider air transport for transport times and the ability to give blood.
- Do not overlook the possibility of associated domestic violence or abuse